Symptoms in the Pharmacy

A Guide to the Management of Common Illness

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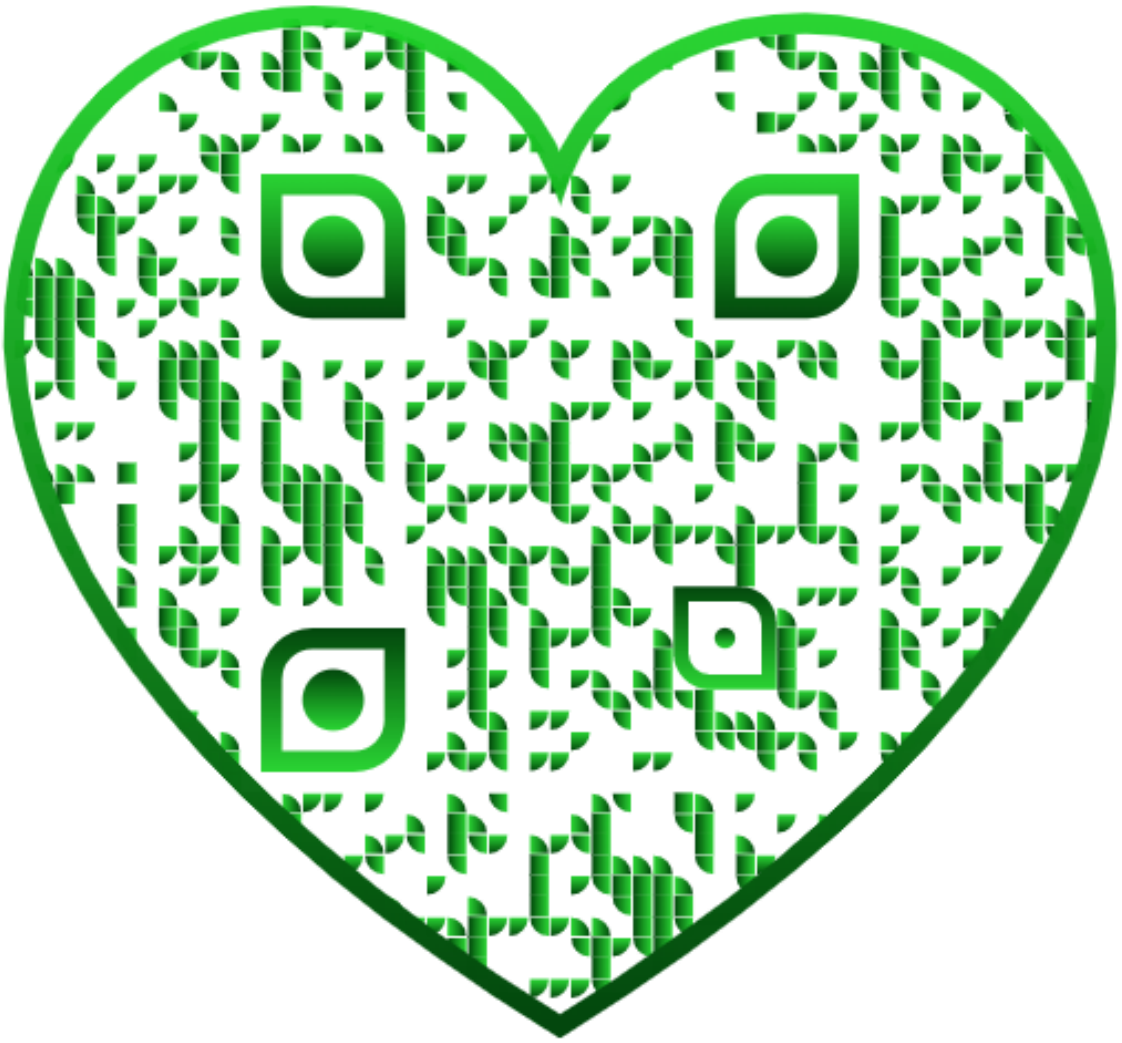

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Preface

This is the fifth edition of our book. Among the important changes since the last edition is the move of more medicines from the prescription-only medicine (POM) category to the pharmacy (P) medicine category. Omeprazole was the first proton pump inhibitor (PPI) to move to the P category in 2004. The move of simvastatin to over-the-counter (OTC) availability is another landmark change. Here, the pharmacist's skills in questioning and explaining in relation to risk assessment for heart disease are paramount, as are links to other health professionals.

There have also been important changes in the National Health Service (NHS) since the last edition. In many areas NHS-funded community pharmacy Minor Ailment Schemes are now in operation. Under these schemes patients who are exempt from prescription charges can obtain free treatment from the pharmacy. Thus more people will consult the pharmacist for advice who previously consulted their doctor, and this role of the pharmacist may develop into independent prescribing. The existing schemes are well used, particularly for children's minor illness. We have thus expanded our explanation of common childhood illnesses to enable the pharmacist to manage where appropriate, to reassure and refer when necessary.

The supply of medicines under Patient Group Directions (PGDs) in community pharmacies is another key change. It enables the pharmacist to supply, on the NHS, treatments that would otherwise be POMs. Examples include chloramphenicol eye drops for eye infections and trimethoprim for uncomplicated urinary tract infection. In response we have extended our coverage of eye conditions.

The public will increasingly use their community pharmacy for advice and treatment. We have incorporated new case studies that test the boundaries of pharmacists' professional judgement and further develop risk assessment skills.

The move towards partnership in medicines use (concordance) has developed further since the last edition. We believe this is just as relevant to OTC as to POMs. Therefore we have revised the introduction to strengthen the partnership approach. We have also introduced a patient perspective to some of our case studies and about specific issues (e.g. chronic conditions) where this can increase pharmacists'

understanding of how things look 'from the other side of the counter'. We will welcome feedback from you on these changes.

Systematic reviews of published evidence are continuing to contribute to pharmacists' treatment choices, and their findings have been incorporated and updated into this edition. Evidence on benefits and potential harm from herbal and other complementary medicines continues to emerge; thus we extend our discussion on glucosamine and chondroitin in arthritic conditions, and on St John's wort in depression.

These changes mean that pharmacists at all stages of their career need practical information to help them in dealing with new areas of patient care and to ensure their knowledge is up to date. We have reviewed all of the practical case studies and added new ones to give a better reflection of current issues in practice.

We have received many positive letters and comments from pharmacists (undergraduate students, pre-registration trainees and practising pharmacists) all over the world following the earlier editions of the book and have tried to act on our readers' suggestions. We would like to thank all the pharmacists who contributed in this way and hope that the present edition will meet the needs they have helped us to identify.

We would also like to thank Kathryn Coates and her network of mums, who provided advice on childhood conditions and on women's health, and on the sort of concerns and queries that they hoped their pharmacists would answer.

Thanks also to Charlotte Purcell at Bradford School of Pharmacy.

Alison Blenkinsopp
Paul Paxton
John Blenkinsopp

Introduction: How to use this book

Every working day, people come to the community pharmacy for advice about minor ailments. For the average community pharmacy a minimum of ten such requests will be received each day; for some the figure is far higher. With increasing pressure on doctors' workload it is likely that the community pharmacy will be even more widely used as a first port of call for minor illness. Members of the public present to pharmacists and their staff in three ways:

- Requesting advice about symptoms.
- Asking to purchase a named medicine.
- Requiring general health advice (e.g. about dietary supplements).

The pharmacist's role in responding to symptoms and overseeing the sale of over-the-counter (OTC) medicines is substantial and requires a mix of knowledge and skills in the area of diseases and their treatment. In addition, pharmacists are responsible for ensuring that their staff provide appropriate advice and recommendations.

Research on the appropriateness of advice-giving in community pharmacies has identified a set of criteria that pharmacists can use to consider their own pharmacy's approach (Bissell, P., Ward, P. R. & Noyce, P. R. Appropriateness in measurement: application to advice-giving in community pharmacies. *Soc Sci Med* 2000; **51**: 343–59):

- General communication skills.
- What information is gathered by pharmacy staff?
- How is the information gathered by the pharmacy staff?
- Issues to be considered by pharmacy staff before giving advice.
- Rational content of advice given by pharmacy staff.
- How is the advice given?
- Rational product choice made by pharmacy staff.
- Referral.

Key skills are:

- Differentiation between minor and more serious symptoms.
- Listening skills.
- Questioning skills.
- Treatment choices based on evidence of effectiveness.
- The ability to pass these skills on by acting as a role model for other pharmacy staff.

Working in partnership with patients

In this book we refer to the people seeking advice about symptoms as patients. It is important to recognise that many of these patients will in fact be healthy people. We use the word 'patient' because we feel that the terms 'customer' and 'client' do not capture the nature of consultations about ill-health.

Pharmacists are skilled and knowledgeable about medicines and about the likely causes of illness. In the past the approach has been to see the pharmacist as expert and the patient as beneficiary of the pharmacist's information and advice. But patients are not blank sheets or empty vessels. They are experts in their own and their children's health. The patient

– may have experienced the same or a similar condition in the past;
– may have tried different treatments already;
– will have their own ideas about possible causes;
– will have views about different sorts of treatments; and
– may have preferences for certain treatment approaches.

The pharmacist needs to take this into account in the consultation with the patient, and to enable the patient to participate by actively eliciting their views and preferences. Not all patients will want to engage in decision-making about how to manage their symptoms but research shows that many do. Some will want the pharmacist to simply make a decision on their behalf. What the pharmacist needs to do is to find out what the patient wants.

Responding to a request for a named product

Where a request is made to purchase a named medicine, the approach needs to take into account that the person making the request might be an expert or a novice user. We define the expert user as someone who has used the medicine before for the same or a similar condition and is familiar with it. While pharmacists and their staff need to ensure that the requested medicine is appropriate, they also need to bear in mind the previous knowledge and experience of the purchaser.

Research shows that the majority of pharmacy customers do not mind being asked questions about their medicine purchase. An exception to this is those who wish to buy a medicine they have used before and would prefer not to be subjected to the same questions each time they ask for the product. There are two key points here for the pharmacist: firstly, it can be helpful to briefly explain why questions are needed, and secondly, fewer questions are normally needed where customers request a named medicine that they have used before.

A suggested sequence in response to a request for a named product

Ask whether the person has used the medicine before, and if the answer is yes, ask if any further information is needed.

Quickly check on whether other medicines are being taken.

If the person has not used the medicine before, more questions will be needed. One option is to follow the sequence for responding to requests for advice about symptoms (see below). It can be useful to ask how the person came to request this particular medicine; for example, have they seen an advertisement for it? Has it been recommended by a friend or family member?

Pharmacists will use their professional judgement in dealing with regular customers whom they know well and where the individual's medication history is known. The pharmacy patient medication records (PMRs) are a source of back-up information for regular customers. However, for new customers where such information is not known, more questions are likely to be needed.

Responding to a request for help with symptoms

1 *Information-gathering*: by developing rapport and by listening and questioning to obtain information about symptoms, e.g. to identify problems that require referral; what treatments (if any) have helped before; what medications are being taken regularly; what the patient's ideas, concerns and expectations are about their problem and possible treatment.

2 *Decision-making*: is referral for a medical opinion required?

3 *Treatment*: the selection of possible, appropriate and effective treatments (where needed); offering options to the patient and advising on use of treatment.

4 *Outcome*: telling the patient what action to take if the symptoms do not improve.

1 Information-gathering

Most information required to make a decision and recommend treatment can be gleaned from just listening to the patient. The process should start with open-type questions and perhaps an explanation of why it is necessary to ask personal questions. Some patients do not yet understand why the pharmacist needs to ask questions before recommending treatment. An example might be:

Patient: Can you give me something for my piles?

Pharmacist: I'm sure I can. To help me give the best advice though, I'd like a bit more information from you, so I need to ask a few questions. Is that OK?

Patient: That's fine.
Pharmacist: Could you just tell me what sort of trouble you get with your piles?

Hopefully this will lead to a description of most of the symptoms required for the pharmacist to make an assessment. Other forms of open questions could include: How does that affect you? What sort of problems does it cause you? By carefully listening and possibly reflecting on comments made by the patient, the pharmacist can obtain a more complete picture.

Patient: Well, I get spells of bleeding, and soreness. It's been going on for years.
Pharmacist: You say years?
Patient: Yes, on and off for 20 years since my last pregnancy. I've seen my doctor several times and had them injected, but it keeps coming back. My doctor said I'd have to have an operation but I don't want one; can you give me some suppositories to stop them bleeding?
Pharmacist: Bleeding . . . ?
Patient: Yes, every time I go to the toilet blood splashes around the bowl. It's bright red.

This form of listening can be helped by asking questions to clarify points: I'm not sure I quite understand when you say . . . , or I'm not quite clear what you meant by. . . . Another useful technique is to summarise the information so far: I'd just like to make sure I've got it right. You tell me you've had this problem since . . .

Once this form of information-gathering has occurred there will be some facts still missing. It is now appropriate to move onto some direct questions.

Pharmacist: How are your bowels . . . has there been any change? (This question is very important to exclude a more serious cause for the symptoms that would require referral.)
Patient: No, they are fine, always regular.
Pharmacist: Can you tell me what sort of treatments you have used in the past, and how effective they were?

Other questions could include: What treatments have you tried so far this time? What sort of treatment were you hoping for today? What other medications are you taking at present? Do you have any allergies?

2 Decision-making

Triaging is the term given to assessing the level of seriousness of a presenting condition and thus the most appropriate action. It has

come to be associated with both prioritisation (e.g. as used in accident and emergency (A&E) departments) and clinical assessment. Community pharmacists have developed procedures for information-gathering when responding to requests for advice that identify when the presenting problem can be managed within the pharmacy and when referral for medical advice is needed. The use of questioning to obtain the sorts of information needed is discussed below. Furthermore, in making this clinical assessment, pharmacists incorporate management of certain conditions and making recommendations about this.

The use of protocols and algorithms in the triaging process is becoming more widespread in the UK, with computerised decision support systems increasingly used. Such systems are currently the basis for the nurse-led national telephone health advice service, NHS Direct, and have been used in other countries, notably the USA. It is possible that in the future computerised decision support may play a greater part in face-to-face consultations, perhaps including community pharmacies.

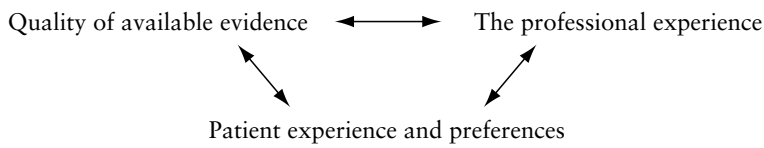
If the following information were obtained, then a referral would be required:

> *Pharmacist*: Could you tell me what sort of trouble you have had with your piles?
> *Patient*: Well, I get spells of bleeding, and soreness. It's been going on for years, although seems worse this time . . .
> *Pharmacist*: When you say worse, what does that mean?
> *Patient*: Well . . . my bowels have been playing up and I've had some diarrhoea . . . I have to go three or four times a day . . . and this has been going on for about 2 months.

For more information on when to refer see 'D: Danger symptoms' below.

3 Treatment

The pharmacist's background in pharmacology, therapeutics and pharmaceutics gives a sound base on which to make logical treatment choices based on the individual patient's need, together with the characteristics of the medicine concerned. In addition to the effectiveness of the active ingredients included in the product, the pharmacist will need to consider potential interactions, cautions, contraindications and adverse reaction profile of each constituent. With the increasing move to evidence-based practice, pharmacists need to think carefully about the effectiveness of the treatments they recommend, combining this with their own and the patient's experience.



Concordance in the use of OTC medicines is important and the pharmacist will elicit the patient's preferences and discuss treatment options in this context. Some pharmacists have developed their own OTC formularies with preferred treatments that are recommended by pharmacists and their staff. In some areas these have been discussed with local general practitioners (GPs) and practice nurses to cover the referral of patients from the GP practice to the pharmacy.

PMRs can play an important part in supporting the process of responding to symptoms. Research shows that only one in four pharmacists currently records OTC treatment on the pharmacist's own PMR system. Yet such recording can complete the profile of medication, and review of concurrent drug therapy can identify potential drug interactions and adverse effects. In addition, such record-keeping can make an important contribution to clinical governance. Improvements in IT systems in pharmacies will make routine record-keeping more feasible. Keeping records for specific groups of patients, e.g. older people, is one approach in the meantime.

Effectiveness of treatments

Pharmacists and their staff should, wherever possible, base treatment recommendations on evidence. For more recently introduced medicines and for those that have moved from presription-only-medicine (POM) to pharmacy (P) medicine, there is usually an adequate evidence base. For some medicines, particularly older ones, there may be little or no evidence. Here, pharmacists need to bear in mind that absence of evidence does not in itself signify absence of effectiveness.

Current evidence of effectiveness is summarised in the relevant *British National Formulary* (*BNF*) monograph. More detailed reviews of evidence can be found in *Clinical Evidence* (BMJ Publishing Group). Both publications have two editions each year and are available online. The *BNF* can be found at www.bnf.org.uk. *Clinical Evidence* can be accessed free of charge through the National Electronic Library for Health at www.nelh.nhs.uk. Useful websites for clinical guidelines are PRODIGY, the National Health Service (NHS) decision support system for prescribers at www.prodigy.nhs. uk/guidance; the Scottish Inter-Collegiate Guideline Network (SIGN) at www.sign.ac.uk and the National Institute for Clinical Excellence at www.nice.org.uk. Pharma-

cists can access MEDLINE to search for original references via the links section of the Royal Pharmaceutical Society of Great Britain website at www.rpsgb. org.uk. The website for NHS Direct at www.nhsdirect.nhs.uk includes algorithms and management advice for minor ailments as well as Best Treatments for patients to access information about their condition and treatment options.

Key interactions between OTC treatments and other drugs are included in each section of this book. The *BNF* provides an alphabetical listing of drugs and interactions, together with an indication of clinical significance. In this book, generic drug names are italicised. For symptoms discussed in this book, the section on 'Management' includes brief information about the efficacy, advantages and disadvantages of possible therapeutic options. Also included are useful points of information for patients about the optimum use of OTC treatments, under the heading 'Practical points'.

4 Outcome

Most of the symptoms dealt with by the community pharmacist will be of a minor and self-limiting nature and should resolve within a few days. However, sometimes this will not be the case and it is the pharmacist's responsibility to make sure that patients know what to do if they do not get better. Here, a defined timescale should be used, as suggested in the relevant sections of this book, so that when offering treatment the pharmacist can set a time beyond which the patient should seek medical advice if symptoms do not improve. The 'Treatment timescales' outlined in this book naturally vary according to the symptom and sometimes according to the patient's age, but are usually less than 1 week.

Pharmacists are likely to be increasingly involved in the management of long-term chronic or intermittent conditions. Here, monitoring of progress is important and a series of consultations is likely rather than just one.

Mnemonics and the consultation

Pharmacists need to develop a method of information-seeking that works for them. Some pharmacists find that a mnemonic such as the two shown below can be useful, although care needs to be taken not to recite questions in rote fashion without considering their relevance to the individual case. Good listening will glean much of the information required. The mnemonic can be a prompt to ensure all relevant information has been obtained. Developing rapport is essential to obtain good information, and reading out a list of questions can be off-putting and counterproductive.

W Who is the patient and what are the symptoms?
H How long have the symptoms been present?
A Action taken?
M Medication being taken?

W: The pharmacist must first establish the identity of the patient: the person in the pharmacy might be there on someone else's behalf. The exact nature of the symptoms should be established: patients often self-diagnose illnesses and the pharmacist must not accept such a self-diagnosis at face value.

H: Duration of symptoms can be an important indicator of whether referral to the doctor might be required. In general, the longer the duration, the more likely is the possibility of a serious rather than a minor case. Most minor conditions are self-limiting and should clear up within a few days.

A: Any action taken by the patient should be established, including the use of any medication to treat the symptoms. About one in two patients will have tried at least one remedy before seeking the pharmacist's advice. Treatment may have consisted of OTC medicines bought from the pharmacy or elsewhere, other medicines prescribed by the doctor on this or a previous occasion, or medicines borrowed from a friend or neighbour or found in the medicine cabinet. Homoeopathic or herbal remedies may have been used. The cultural traditions of people from different ethnic backgrounds include the use of various remedies that may not be considered medicines.

If the patient has used one or more apparently appropriate treatments without improvement, referral to the family doctor may be the best course of action.

M: The identity of any medicines taken regularly by the patient is important for two reasons: possible interactions and potential adverse reactions. Such medicines will usually be those prescribed by the doctor, but may also include OTC products. The pharmacist needs to know about all the medicines being taken by the patient because of the potential for interaction with any treatment that the pharmacist might recommend.

The community pharmacist has an increasingly important role in detecting adverse drug reactions, and consideration should be given to the possibility that the patient's symptoms might be an adverse effect caused by medication. For example, whether gastric symptoms such as

indigestion might be due to a non-steroidal anti-inflammatory drug (NSAID) taken on prescription, or a cough might be due to an angiotensin-converting enzyme (ACE) inhibitor being taken by the patient. Where the pharmacist suspects an adverse drug reaction to a prescribed medicine, the pharmacist should discuss with the doctor what actions should be taken (perhaps including a Yellow Card report to the Committee on Safety of Medicines, which can now be made by the pharmacist) and the doctor may wish the patient to be referred so that treatment can be reviewed.

The second mnemonic, ASMETHOD, was developed by Derek Balon, a community pharmacist in London:

A Age/appearance
S Self or someone else
M Medication
E Extra medicines
T Time persisting
H History
O Other symptoms
D Danger symptoms

Some of the areas covered by the ASMETHOD list have been discussed already. The others can now be considered.

A: Age and appearance

The appearance of the patient can be a useful indicator of whether a minor or more serious condition is involved. If the patient looks ill, e.g. pale, clammy, flushed or grey, the pharmacist should consider referral to the doctor. As far as children are concerned, appearance is important, but in addition the pharmacist can ask the parent whether the child is generally well. A child who is cheerful and energetic is unlikely to have anything other than a minor problem, whereas one who is quiet and listless, or who is fractious, irritable and feverish, might require referral.

The age of the patient is important because the pharmacist will consider some symptoms as potentially more serious according to age. For example, acute diarrhoea in an otherwise healthy adult could reasonably be treated by the pharmacist. However, such symptoms in a baby could produce dehydration more quickly; elderly patients are also at a higher risk of becoming dehydrated. Oral thrush is common in babies, less common in older children and adults; the pharmacist's decision about whether to treat or refer could therefore be influenced by age.

Age will play an important part in determining any treatment offered by the pharmacist. Some preparations are not recommended at all for children under 12 years, e.g. *loperamide*. *Hydrocortisone cream* and *ointment* should not be recommended for children under 10; *aspirin* should not be used in children under 16; *corticosteroid nasal sprays* and *omeprazole* should not be recommended for those under 18. Others must be given in a reduced dose or as a paediatric formulation and the pharmacist will thus consider recommendations carefully.

Other OTC preparations have a minimum specified age, e.g. 16 years for emergency hormonal contraception and nicotine replacement therapy (NRT), and 18 for treatments of vaginal thrush. Pharmacists are used to assessing patients' approximate age and would not routinely ask for proof of age here, unless there was a specific reason to do so.

S: Clarification as to who is the patient

M: Medication regularly taken, on prescription or OTC

E: Extra medication tried to treat the current symptoms

T: Time, i.e. duration of symptoms

H: History

There are two aspects to the term 'history' in relation to responding to symptoms: firstly, the history of the symptom being presented and secondly, previous medical history. For example, does the patient have diabetes, hypertension or asthma? PMRs should be used to record relevant existing conditions.

Questioning about the history of a condition may be useful; how and when the problem began, how it has progressed and so on. If the patient has had the problem before, previous episodes should be asked about to determine the action taken by the patient and its degree of success. In recurrent mouth ulcers, for example, do the current ulcers resemble the previous ones, was the doctor or dentist seen on previous occasions, was any treatment prescribed or OTC medicine purchased and, if so, did it work?

In asking about the history, the timing of particular symptoms can give valuable clues as to possible causes. The attacks of heartburn that occur after going to bed or on stooping or bending down are indeed likely to be due to reflux, whereas those that happen during exertion such as exercise or heavy work may not be.

History-taking is particularly important when assessing skin disease. Pharmacists often think, erroneously, that recognition of the

appearance of skin conditions is the most important factor in responding to such symptoms. In fact, many dermatologists would argue that history-taking is more important because some skin conditions resemble each other in appearance. Furthermore, the appearance may be altered during the course of the condition. For example, the use of a topical corticosteroid inappropriately on infected or infested skin may substantially change the appearance; allergy to ingredients such as local anaesthetics may produce a problem in addition to the original complaint. The pharmacist must know therefore which creams, ointments or lotions have been applied.

O: Other symptoms

Patients generally tend to complain about the symptoms that concern them most. The pharmacist should always ask whether the patient has noticed any other symptoms, or anything different from usual because, for various reasons, patients may not volunteer all the important information. Embarrassment may be one such reason, so that patients experiencing rectal bleeding may only mention that they have piles or are constipated.

The importance or significance of symptoms may not be recognised by patients; for example, those who have constipation as a side-effect from a tricyclic antidepressant will probably not mention their dry mouth because they can see no link or connection between the two problems.

D: Danger symptoms

These are the symptoms or combinations of symptoms that should ring warning bells for pharmacists because immediate referral to the doctor is required. Blood in the sputum, vomit, urine or faeces would be examples of such symptoms, as would unexplained weight loss. Danger symptoms are included and discussed in each section of this book so that their significance can be understood by the pharmacist.

Decision-making: risk assessment

In making decisions the pharmacist assesses the possible risk to the patient of different decision paths. The possible reasons for referral for further advice include:

- 'danger' or 'red flag' signs or symptoms
- incomplete information (e.g. a ear condition where the ear has not been examined)
- duration or recurrence of symptoms

As a general rule, the following indicate a higher risk of a serious condition and should make the pharmacist consider referring the patient to the doctor:

- long duration of symptoms
- recurring or worsening problems
- severe pain
- failed medication (one or more appropriate medicines used already, without improvement)
- suspected adverse drug reactions (to prescription or OTC medicine)
- danger symptoms

For relevant sections of this book, the duration of symptoms beyond which the pharmacist should consider immediate referral is defined in the section 'When to refer'. In addition, for relevant sections a 'Treatment timescale' is included; this is the length of time for which the problem might be treated before the patient sees the doctor.

Some community pharmacists now use referral forms as an additional means of conveying information to the doctor with the patient. Several primary care organisations have introduced such forms and the National Pharmaceutical Association also supplies them.

Discussions with local family doctors can assist the development of protocols and guidelines for referral, and we recommend that pharmacists take the opportunity to develop such guidelines with their medical and nursing colleagues in primary care. Joint discussions of this sort can lead to effective two-way referral systems and local agreements about preferred treatments.

Privacy in the pharmacy

Roughly half of pharmacy customers feel that there is insufficient privacy in the shop to discuss personal matters. There is some evidence of a gap between patients' and pharmacists' perceptions of privacy. Pharmacists observe from their own experience that some patients are content to discuss even potentially sensitive subjects in the pharmacy. While this is true for some people, others are put off asking for advice because of insufficient privacy.

The pharmacist should always bear the question of privacy in mind and, where possible, seek to create an atmosphere of confidentiality if sensitive problems are to be discussed. Using professional judgement and personal experience, the pharmacist can look for signs of hesitancy or embarrassment on the patient's part and can suggest moving to a quieter part of the pharmacy to continue the conversation.

The provision of a consultation area, where possible, may encourage embarrassed patients to seek advice more readily. In a recent Consumers' Association survey of the general public, installation of a consultation area was the third most popular change cited to improve community pharmacy services. The number of pharmacies with a consultation area is increasing and this trend is set to continue. Some primary care organisations in England are experimenting with premises investment schemes for community pharmacies and providing financial support for the installation of consultation areas and the necessary refitting or building.

Working with family doctors and nurse colleagues in primary care

Community pharmacists are the key gateway into the formal NHS through their filtering of symptoms, with referral to the family doctor when necessary. This filtering is more correctly termed triaging and will be increasingly important in maximising the skills and input of pharmacists and nurses. The role of nurses in the management of minor ailments is becoming more formalised in medical practices and the NHS Direct telephone triage system. NHS Direct (and NHS 24 in Scotland) now refers patients to community pharmacies.

Some community pharmacists are now working more closely with local GP practices and primary care organisations by participating in NHS minor ailment schemes and advising on prescribing. Nurses are providing care in GP practice-based minor illness clinics, Walk-In Centres and other settings such as Minor Injuries Units and A&E departments.

There is a great deal of scope for joint working in the area of OTC medicines. We suggest that pharmacists might consider the following steps:

- Agreeing guidelines for referral with local family doctors, perhaps including feedback from the GP to the pharmacist on the outcome of the referral. Two-way referrals with Walk-In Centres are also helpful.
- Using PMRs to keep information on OTC recommendations to patients.
- Keeping local family doctors and nurses informed about POM to P changes.
- Using referral forms when recommending that a patient see his or her doctor.
- Agreeing an OTC formulary with local GPs and practice nurses.
- Agreeing with local GPs the response to suspected adverse drug reactions.

Actions like these will help to improve communication, will increase GPs' and nurses' confidence in the contribution the pharmacist can make to patient care and will also support the pharmacist's integration into the primary care team.

Respiratory Problems

Colds and flu

The common cold comprises a mixture of viral upper respiratory tract infections (URTIs). Although colds are self-limiting, many people choose to buy OTC medicines for symptomatic relief. Some of the ingredients of OTC cold remedies may interact with prescribed therapy, occasionally with serious consequences. Therefore, careful attention needs to be given to taking a medication history and selecting an appropriate product.

What you need to know
Age (approximate)
Child, adult
Duration of symptoms
Runny/blocked nose
Summer cold
Sneezing/coughing
Generalised aches/headache
High temperature
Sore throat
Earache
Facial pain/frontal headache
Flu
Asthma
Previous history
Allergic rhinitis
Bronchitis
Heart disease
Present medication

Significance of questions and answers

Age

Establishing who the patient is – child or adult – will influence the pharmacist's decision about the necessity of referral to the doctor and choice of treatment. Children are more susceptible to URTI than adults.

Duration

Patients may describe a rapid onset of symptoms or a gradual onset over several hours; the former is said to be more commonly true of flu, the latter of the common cold. Such guidelines are general rather than definitive. The symptoms of the common cold usually last for 7–14 days. Some symptoms, such as a cough, may persist after the worst of the cold is over.

Symptoms

Runny/blocked nose

Most patients will experience a runny nose (rhinorrhoea). This is initially a clear watery fluid, which is then followed by the production of thicker and more tenacious mucus (this may be purulent). Nasal congestion occurs because of dilatation of blood vessels, leading to swelling of the lining surfaces of the nose. This narrows the nasal passages, which are further blocked by increased mucus production.

Summer colds

In summer colds the main symptoms are nasal congestion, sneezing and irritant watery eyes; these are more likely to be due to allergic rhinitis (see p. 49).

Sneezing/coughing

Sneezing occurs because the nasal passages are irritated and congested. A cough may be present (see p. 29) either because the pharynx is irritated (producing a dry, tickly cough) or as a result of irritation of the bronchus caused by postnasal drip.

Aches and pains/headache

Headaches may be experienced because of inflammation and congestion of the nasal passages and sinuses. A persistent or worsening frontal headache (pain above or below the eyes) may be due to sinusitis (see below and p. 199). People with flu often report muscular and joint aches and this is more likely to occur with flu than with the common cold (see below).

High temperature

Those suffering from a cold often complain of feeling hot, but in general a high temperature will not be present. The presence of fever may be an indication that the patient has flu rather than a cold (see below).

Sore throat

The throat often feels dry and sore during a cold and may sometimes be the first sign that a cold is imminent (see p. 41).

Earache

Earache is a common complication of colds, especially in children. When nasal catarrh is present, the ear can feel blocked. This is due to blockage of the Eustachian tube, which is the tube connecting the middle ear to the back of the nasal cavity. Under normal circumstances the middle ear is an air-containing compartment. However, if the Eustachian tube is blocked, the ear can no longer be cleared by swallowing and may feel uncomfortable and deaf. This situation often resolves spontaneously, but decongestants and inhalations can be helpful (see 'Management' below). Sometimes the situation worsens when the middle ear fills up with fluid. This is an ideal site for a secondary infection to settle. When this does occur, the ear becomes acutely painful and can require antibiotics. The infection is called acute otitis media (AOM). AOM is a common infection in young children. In the UK about 30% of children visit their GP with AOM each year and 97% receive antibiotics. The evidence for antibiotic use is conflicting with some trials showing benefit and others no benefit for taking antibiotics. Antibiotics have also been shown to increase the risk of vomiting, diarrhoea and rash, and it is known that in about 80% of children AOM will resolve spontaneously in about 3 days without antibiotics.

In summary, a painful ear can initially be managed by the pharmacist. There is evidence that both *paracetamol* and *ibuprofen* are effective treatments for AOM. However, if pain were to persist or be associated with an unwell child (e.g. high fever, very restless or listless, vomiting), then referral to the GP would be advisable.

Facial pain/frontal headache

Facial pain or frontal headache may signify sinusitis. Sinuses are air-containing spaces in the bony structures adjacent to the nose (maxillary sinuses) and above the eyes (frontal sinuses). In a cold their lining surfaces become inflamed and swollen, producing catarrh. The secretions drain into the nasal cavity. If the drainage passage becomes blocked, fluid builds up in the sinus and can become secondarily (bacterially) infected. If this happens, persistent pain arises in the sinus areas. The maxillary sinuses are most commonly involved. When the frontal sinuses are infected, the sufferer may complain of a frontal (forehead) headache. The headache is typically worsened by lying down or bending forwards.

Flu

Differentiating between colds and flu may be needed to make a decision about whether referral is needed. Patients in 'at-risk' groups

might be considered for antiviral treatment. Flu is generally considered to be likely if

- temperature is 38°C or higher (37.5°C in the elderly).
- a minimum of one respiratory symptom (cough, sore throat, nasal congestion or rhinorrhoea) is present.
- a minimum of one constitutional symptom (headache, malaise, myalgia, sweats/chills, prostration) is present.

Flu often starts abruptly with sweats and chills, muscular aches and pains in the limbs, a dry sore throat, cough and high temperature. Someone with flu may be bedbound and unable to go about usual activities. There is often a period of generalised weakness and malaise following the worst of the symptoms. A dry cough may persist for some time.

True influenza is relatively uncommon compared to the large number of flu-like infections that occur. Influenza is generally more unpleasant, although both usually settle with no need for referral.

Flu can be complicated by secondary lung infection (pneumonia). Complications are much more likely to occur in the very young, the very old and those who have pre-existing heart or lung disease (chronic bronchitis). Warning that complications are developing may be given by a severe or productive cough, persisting high fever, pleuritic-type chest pain (see p. 59) or delirium.

Asthma

Asthmatic attacks can be triggered by respiratory viral infections. Most asthma sufferers learn to start or increase their usual medication to prevent such an occurrence. However, if these measures fail, referral is recommended.

Previous history

People with a history of chronic bronchitis (defined as a chronic cough and or mucus production for at least 3 months in at least 2 consecutive years when other causes of chronic cough have been excluded) may be advised to see their doctor if they have a bad cold or flu-like infection as it often causes an exacerbation of their bronchitis. In this situation the doctor is likely to increase the dose of inhaled anticholinergics and beta-2 agonists and prescribe a course of antibiotics. Certain medications are best avoided in those with heart disease, hypertension and diabetes.

Present medication

The pharmacist must ascertain any medicines being taken by the patient. It is important to remember that interactions might occur with some of the constituents of commonly used OTC medicines.

If medication has already been tried for relief of cold symptoms with no improvement and if the remedies tried were appropriate and used for a sufficient amount of time, referral to the doctor might occasionally be needed. In most cases of colds and flu, however, OTC treatment will be appropriate.

When to refer
Earache not settling with analgesic (see above)
Facial pain/frontal headache
In the very young
In the very old
In those with heart or lung disease, e.g. chronic bronchitis
With persisting fever and productive cough
With delirium
With pleuritic chest pain (for further discussion see p. 59)
Asthma

Treatment timescale

Once the pharmacist has recommended treatment, patients should be advised to see their doctor in 10–14 days if the cold has not improved.

Management

The use of OTC medicines in the treatment of colds and flu is widespread and such products are heavily advertised to the public. There is little doubt that appropriate symptomatic treatment can make the patient feel better; the placebo effect also plays an important part here. For some medicines used in the treatment of colds, particularly older medicines, there is little evidence available from which to judge effectiveness. The pharmacist's role is to select appropriate treatment based on the patient's symptoms and available evidence, and taking into account the patient's preferences. Polypharmacy abounds in the area of cold treatments and patients should not be overtreated. The discussion of medicines that follows is based on individual constituents; the pharmacist can decide whether a combination of two or more drugs is needed.

Decongestants

Sympathomimetics

Sympathomimetics (e.g. *pseudoephedrine*) can be effective in reducing nasal congestion. Nasal decongestants work by constricting the

dilated blood vessels in the nasal mucosa. The nasal membranes are effectively shrunk, so that drainage of mucus and circulation of air are improved and the feeling of nasal stuffiness is relieved. These medicines can be given orally or applied topically. Tablets and syrups are available, as are nasal sprays and drops. If nasal sprays/drops are to be recommended, the pharmacist should advise the patient not to use the product for longer than 7 days. Rebound congestion (rhinitis medicamentosa) can occur with topically applied but not oral sympathomimetics. The decongestant effects of topical products containing *oxymetazoline* or *xylometazoline* are longer lasting (up to 6 h) than those of some other preparations such as *ephedrine*. The pharmacist can give useful advice about the correct way to administer nasal drops and sprays.

Problems

The pharmacist should be aware that some of these drugs (e.g. *ephedrine*, *pseudoephedrine*), when taken orally, have the potential to keep patients awake because of their stimulating effects on the central nervous system (CNS). In general, *ephedrine* is more likely to produce this effect than the other sympathomimetics. It is reasonable to suggest that the patient avoids taking a dose of the medicine near bedtime.

Sympathomimetics can cause stimulation of the heart, an increase in blood pressure, and may affect diabetic control because they can increase blood glucose levels. They should be used with caution (current *BNF* warnings) in people with diabetes, those with heart disease or hypertension, and those with hyperthyroidism. Hyperthyroid patients' hearts are more vulnerable to irregularity, so that stimulation of the heart is particularly undesirable for such patients.

Sympathomimetics are most likely to cause these unwanted effects when taken by mouth and are unlikely to do so when used topically. Nasal drops and sprays containing sympathomimetics can therefore be recommended for those patients in whom the oral drugs are less suitable. Saline nasal drops or the use of inhalations would be other possible choices for patients in this group.

The interaction between sympathomimetics and monoamine oxidase inhibitors (MAOIs) is potentially extremely serious; a hypertensive crisis can be induced and several deaths have occurred in such cases. This interaction can occur up to 2 weeks after a patient has stopped taking the MAOI, so the pharmacist must establish any recently discontinued medication. There is a possibility that topically applied sympathomimetics could induce such a reaction in a patient

taking an MAOI. It is therefore advisable to avoid both oral and topical sympathomimetics in patients taking MAOIs. Cautions:

diabetes
heart disease
hypertension
hyperthyroidism

Interactions. Avoid in those taking
MAOIs (e.g. *phenelzine*)
reversible inhibitors of monoamine oxidase A (RIMAs) (e.g. *moclobemide*)
beta-blockers
tricyclic antidepressants (e.g. *amitriptyline*) – a theoretical interaction that appears not to be a problem in practice.

Phenylpropanolamine and stroke

A study conducted in the USA showed an association between the use of *phenylpropanolamine* (PPA) and haemorrhagic stroke. The most significant increased risk in the US study was among women who took PPA in appetite-suppressant products, which are not available in the UK. It is important to note that there are differences between the USA and the UK in the way PPA is used as a non-prescription medicine. The maximum daily dose is 100 mg in the UK compared with 150 mg in the USA. A review conducted by the UK Committee on Safety of Medicines in 2000 concluded that any risk associated with PPA use in preparations and doses used in the UK appears to be very small. Nevertheless, most UK products containing an oral decongestant have since been reformulated to exclude PPA.

Antihistamines **(see also p. 53)**

Antihistamines can reduce some of the symptoms of a cold: runny nose (rhinorrhoea) and sneezing. These effects are due to the anticholinergic action of antihistamines. The older drugs (e.g. *chlorphenamine* (*chlorpheniramine*), *promethazine*) have more pronounced anticholinergic actions than do the non-sedating antihistamines (e.g. *loratadine*, *cetirizine*, *acrivastine*). Antihistamines are not so effective at reducing nasal congestion. Some (e.g. *diphenhydramine*) may also be included in cold remedies for their supposed antitussive action (see p. 36) or to help the patient to sleep (included in combination products intended to be taken at night).

Interactions. The problem of using antihistamines, particularly the older types (e.g. *chlorphenamine*), is that they can cause

drowsiness. Alcohol will increase this effect, as will drugs such as *benzodiazepines*, *phenothiazines* or *barbiturates* that have the ability to cause drowsiness or CNS depression. Antihistamines with known sedative effects should never be recommended for anyone who is driving, or in whom an impaired level of consciousness may be dangerous (e.g. operators of machinery at work).

Because of their anticholinergic activity, the older antihistamines may produce the same adverse effects as anticholinergic drugs (i.e. dry mouth, blurred vision, constipation and urinary retention). These effects are more likely if antihistamines are given concurrently with anticholinergics such as *hyoscine*, or with drugs that have anticholinergic actions such as tricyclic antidepressants.

Antihistamines should be avoided in patients with prostatic hypertrophy and closed-angle glaucoma because of possible anticholinergic side-effects. In patients with closed-angle glaucoma they may cause increased intraocular pressure. Anticholinergic drugs can occasionally precipitate acute urinary retention in predisposed patients, e.g. men with prostatic hypertrophy.

While the probability of such serious adverse effects is low, the pharmacist should be aware of the origin of possible adverse effects from OTC medicines.

At high doses, antihistamines can produce stimulation rather than depression of the CNS. There have been occasional reports of fits being induced at very high doses of antihistamines and it is for this reason that it has been argued that they should be avoided in epileptic patients. However, this appears to be a theoretical rather than a practical problem. Antihistamines can theoretically antagonise the effects of *betahistine*.

Interactions:
- alcohol
- hypnotics
- sedatives
- betahistine
- anticholinergics, e.g. *trihexyphenidyl* (*benzhexol*), tricyclics

Side-effects:
- drowsiness (driving, occupational hazard)
- constipation
- blurred vision

Cautions:
- closed-angle glaucoma
- prostatic obstruction

epilepsy
liver disease

Zinc

Two systematic reviews have found limited evidence that *zinc gluconate* or *acetate lozenges* may reduce continuing symptoms at 7 days compared with placebo. Thus there is indication of some benefit.

Echinacea

A systematic review of trials indicated that some echinacea preparations may be better than placebo or no treatment for the prevention and treatment of colds. However, due to variations in preparations containing echinacea, there is insufficient evidence to recommend a specific product.

Vitamin C

A systematic review found that high-dose vitamin C (over 1 g per day) reduced the duration of colds by about half a day (a reduction of approximately 15% in duration).

Cough remedies

For discussion of products for the treatment of cough, see p. 34.

Analgesics

For details of analgesics, their uses and side-effects, see p. 201.

Products for sore throats

For discussion of products for the treatment of sore throat, see p. 45.

Practical points

Diabetics

The National Pharmaceutical Association and Diabetes UK jointly publish a useful list of OTC products and their sugar and sweetener content. In short-term use for acute conditions, the sugar content of OTC medicines is less important.

Steam inhalations

These may be useful in reducing nasal congestion and soothing the air passages, particularly if a productive cough is present. A systematic review found there was insufficient evidence to judge whether there might be a benefit from this treatment. For further discussion of their use, see p. 37. Inhalants that can be used on handkerchiefs, bedclothes and pillowcases are available. These usually contain

aromatic ingredients such as eucalyptus. Such products can be useful in providing some relief but are not as effective as steam-based inhalations in moistening the airways.

Nasal spray or drops?

Nasal sprays are preferable for adults and children over 6 years of age because the small droplets in the spray mist reach a large surface area. Drops are more easily swallowed, which increases the possibility of systemic effects.

For children under 6 years of age drops are preferred because in young children the nostrils are not sufficiently wide to allow the effective use of sprays. Paediatric versions of nasal drops should be used where appropriate. Manufacturers of paediatric drops advise consultation with the doctor for children under 2.

Prevention of flu

Pharmacists should encourage those in at-risk groups to have an annual flu vaccination. In the UK the health service now provides vaccinations to all patients over 65 and those below that age who have chronic respiratory disease (including asthma), chronic heart disease, chronic renal failure, diabetes mellitus or immunosuppression due to disease or treatment. Community pharmacists are in a good position to use their PMRs to target patients each autumn and remind them to have their vaccination.

Colds and flu in practice

Case 1

Mrs Allen, a regular customer in her late sixties, asks what you can recommend for her husband. He has a very bad cold; the worst symptoms are his blocked nose and sore throat. Although his throat feels sore, she tells you there is only a slight reddening (she looked this morning). He has had the symptoms since last night and is not feverish. He does not have earache but has complained of a headache. When you ask her if he is taking any medicines, she says yes, quite a few for his heart. She cannot remember what they are called. You check the PMR and find that he is taking *aspirin* 75 mg daily, *ramipril* 5 mg daily, *bisoprolol* 10 mg daily and *simvastatin* 40 mg daily. Mrs Allen asks you if it's worth her husband taking extra vitamin C as she's heard this is good for colds. She wondered if this might be better than taking yet more medicines.

The pharmacist's view

The patient's symptoms indicate a cold rather than flu. He is concerned most with his congested nose and sore throat. He is taking a number of medications, which indicate that oral sympathomimetics would be best avoided. You could recommend that he take regular simple painkillers or suck a soothing lozenge or pastille for his sore throat and that he try a topical decongestant or an inhalation to clear his blocked nose. The symptoms may take about 1 week before they start to clear. You offer these alternatives to Mrs Allen to see what she thinks her husband might prefer. You explain that taking vitamin C might reduce the time taken for the cold to get better by about half a day. You show her some vitamin C products and tell her their cost. You also ask if Mr Allen has had a flu jab as he is in an 'at-risk' group.

The doctor's view

The advice given by the pharmacist is sensible. A simple analgesic such as *paracetamol* could help both the headache and sore throat. The development of sinusitis at such an early stage in an infection would be unlikely but it would be wise to enquire whether his colds are usually uncomplicated and to ascertain the site of his headache.

The patient's view

'I came to the pharmacist because we didn't want to bother the doctor. The pharmacist asked me about which symptoms were causing Pete (my husband) the biggest problem and he gave me a choice of what to use. I wanted to know what he thought about vitamin C and he told me about how it might make the cold shorter. In the end though I decided not to bother with it because it would have been quite expensive with the other medicines as well, especially as it was unlikely to make that much difference. I thought I would give him some fresh orange juice instead.'

Case 2

A man comes into the pharmacy just after Xmas asking for some cough medicine for his wife. He says that the medicine needs to be sugar-free as his wife has diabetes. On listening to him further, he says she has had a dreadful cough that keeps her awake at night. Her problem came on 5 days ago when she woke in the morning, complaining of being very achy all over and then became shivery, and developed a high temperature and cough by the evening. Since then her temperature has gone up and down and she hasn't been well enough to get out of bed for very long. She takes *glipizide* and

metformin for her diabetes and he has been checking her glucometer readings, which have all been between 8 and 11 – a little higher than usual. The only other treatment she is taking is *atorvastatin*; she is not on any antihypertensives. He tells you that she will be 70 next year.

The pharmacist's view

The history indicates flu. It would be best for this woman to be seen by her GP. She has been ill for 5 days and has been mostly bedbound during this time. There are several features that suggest she might be at higher risk from flu. I would suggest that her husband call the doctor out to see her, as she does not sound well enough to go to the surgery. Sometimes people are reluctant to call the doctor as they feel they might be 'bothering' the doctor unnecessarily. The pharmacist's support is often helpful.

The doctor's view

The infection is likely to be flu. She is in the higher-risk group for developing complications (age and diabetes), so it would be reasonable to advise referral. Most cases of flu usually resolve within 7 days. The complications can include acute otitis media, bacterial sinusitis, bacterial pneumonia and less commonly, viral pneumonia and respiratory failure. In the USA there are 110 000 admissions per year for influenza with about 20 000 influenza-related deaths. Over 90% of these deaths have been in those over 65.

In this situation the doctor would want to check her chest for signs of a secondary infection. A persisting or worsening fever would point to a complication developing. There would be little point in prescribing an antiviral, e.g. *zanamivir*, as it is only effective if started within 2 days of symptom onset. One review has found it to be effective in reducing the duration of flu symptoms by about 1 day if started soon enough. It would also be advisable to check whether or not her husband had had the flu vaccine. The incubation time for flu is 1–4 days and adults are contagious from the day before symptoms start until 5 days after the onset of symptoms.

Cough

Coughing is a protective reflex action caused when the airway is being irritated or obstructed. Its purpose is to clear the airway so that breathing can continue normally. The majority of coughs presenting in the pharmacy will be caused by a viral URTI. They will often be associated with other symptoms of a cold. The evidence to support the use of cough suppressants and expectorants is not strong but some patients report finding them helpful.

What you need to know
Age (approximate)
Baby, child, adult
Duration
Nature
Dry or productive
Associated symptoms
Cold, sore throat, fever
Sputum production
Chest pain
Shortness of breath
Wheeze
Previous history
Chronic bronchitis
Asthma
Diabetes
Heart disease
Gastro-oesophageal reflux
Smoking habit
Present medication

Significance of questions and answers

Age

Establishing who the patient is – child or adult – will influence the choice of treatment and whether referral is necessary.

Duration

Most coughs are self-limiting and will be better within a few days with or without treatment. In general, a cough of longer than 2 weeks' duration that is not improving should be referred to the doctor for further investigation.

Patients are often concerned when a cough has lasted for, what seems to them to be, a long time. They may be worried that because the cough has not resolved, it may have a serious cause.

Nature of cough

Unproductive (dry, tickly or tight)

In an unproductive cough no sputum is produced. These coughs are usually caused by viral infection and are self-limiting.

Productive (chesty or loose)

Sputum is normally produced. It is an oversecretion of sputum that leads to coughing. Oversecretion may be caused by irritation of the airways due to infection, allergy, etc. or when the cilia are not working properly (e.g. in smokers). Non-coloured (clear or whitish) sputum is uninfected and known as mucoid.

Coloured sputum may sometimes indicate a bacterial chest infection such as bronchitis or pneumonia and require referral. In these situations the sputum is described as green, yellow or rust-coloured thick mucus and the patient is more unwell usually with a raised temperature, shivers and sweats. Sometimes blood may be present in the sputum (haemoptysis), with a colour ranging from pink to deep red. Blood may be an indication of a relatively minor problem such as a burst capillary following a bout of violent coughing during an acute infection, but may be a warning of more serious problems. Haemoptysis is an indication for referral.

Antibacterials/antibiotics are not usually indicated for previously healthy people with acute bronchitis. Most cases of acute bronchitis are caused by viral infections, so antibacterials will not help. Two systematic reviews of antibacterials for acute bronchitis found only slight benefit, possibly reducing the duration of illness by about half a day. Some people who have a tendency towards asthma develop a wheezy bronchitis with a respiratory viral infection. They may benefit from inhalation treatment used in asthma.

If a person has had repeated episodes of bronchitis over the years they might have chronic bronchitis (defined as a chronic cough and/or mucus production for at least 3 months in at least 2 consecutive years when other causes of chronic cough have been excluded). So careful questioning is important to determine this.

There is general consensus that antibacterials should be considered if the person is elderly, has reduced resistance to infection, has co-morbidity (such as diabetes or heart failure) or is deteriorating clinically.

In heart failure and mitral stenosis the sputum is sometimes described as pink and frothy or can be bright red. Confirming symptoms would be breathlessness (especially in bed during the night) and swollen ankles.

Tuberculosis (TB)

Until recently thought of as a disease of the past, the number of TB cases has been rising in the UK and there is increasing concern about resistant strains. Chronic cough with haemoptysis associated with chronic fever and night sweats are classical symptoms. TB is largely a disease of poverty and more likely to present in disadvantaged communities. In the UK most cases of respiratory TB are seen in ethnic minority groups, especially Indian and Africans. Human immunodeficiency virus (HIV) infection is a significant risk factor for the development of respiratory TB.

Croup (acute laryngotracheitis)

Croup usually occurs in infants. The cough has a harsh barking quality. It develops 1 day or so after the onset of coldlike symptoms. It is often associated with difficulty in breathing and an inspiratory stridor (noise in throat on breathing in). Referral is necessary.

Whooping cough (pertussis)

Whooping cough starts with catarrhal symptoms. The characteristic whoop is not present in the early stages of infection. The whoop is the sound produced when breathing in after a paroxysm of coughing. The bouts of coughing prevent normal breathing and the whoop represents the desperate attempt to get a breath. Referral is necessary.

Associated symptoms

Cold, sore throat and catarrh may be associated with a cough. Often there may be a temperature and generalised muscular aches present. This would be in keeping with a viral infection and be self-limiting. Chest pain, shortness of breath or wheezing are all indications for referral (see p. 59).

Postnasal drip

Postnasal drip is a common cause of coughing and may be due to sinusitis (see p. 199).

Previous history

Certain cough remedies are best avoided in diabetics and anyone with heart disease or hypertension (see pp. 36–7).

Chronic bronchitis

Questioning may reveal a history of chronic bronchitis, which is being treated by the doctor with antibiotics. In this situation further treatment may be possible with an appropriate cough medicine.

Asthma

A recurrent night-time cough can indicate asthma, especially in children, and should be referred. Asthma may sometimes present as a chronic cough without wheezing. A family history of eczema, hay fever and asthma is worth asking about. Patients with such a family history appear to be more prone to extended episodes of coughing following a simple URTI.

Cardiovascular

Coughing can be a symptom of heart failure (see p. 60). If there is a history of heart disease, especially with a persisting cough, then referral is advisable.

Gastro-oesophageal

Gastro-oesophageal reflux can cause coughing. Sometimes such reflux is asymptomatic apart from coughing. Some patients are aware of acid coming up into their throat at night when they are in bed.

Smoking habit (see also 'Smoking cessation')

Smoking will exacerbate a cough and can cause coughing since it is irritating to the lungs. One in three long-term smokers develop a chronic cough. If coughing is recurrent and persistent, the pharmacist is in a good position to offer health education advice about the benefits of stopping smoking, suggesting NRT where appropriate. However, on stopping, the cough may initially become worse as the cleaning action of the cilia is re-established during the first few days and it is worth mentioning this. Smokers may assume their cough is harmless, and it is always important to ask about any change in the nature of the cough that might suggest a serious cause.

Present medication

It is always essential to establish which medicines are currently being taken. This includes those prescribed by a doctor and any bought OTC, borrowed from a friend or neighbour or rediscovered in the

family medicine chest. It is important to remember the possibility of interactions with cough medicine.

It is also useful to know which cough medicines have been tried already. The pharmacist may decide that an inappropriate preparation has been taken, e.g. a cough suppressant for a productive cough. If one or more appropriate remedies have been tried for an appropriate length of time without success, then referral is advisable.

Angiotensin-converting enzyme (ACE) inhibitors

Chronic coughing may occur in patients, particularly women, taking ACE inhibitors such as *enalapril*, *captopril*, *lisinopril* and *ramipril*. Patients may develop the cough within days of starting treatment or after a period of a few weeks or even months. The exact incidence of the reaction is not known and estimates vary from 2% to 10% of patients taking ACE inhibitors. ACE inhibitors control the breakdown of bradykinin and other kinins in the lungs, which can trigger a cough. Typically the cough is irritating, non-productive and persistent. Any ACE inhibitor may induce coughing and there seems to be little advantage to be gained in changing from one to another. The cough may resolve or may persist; in some patients the cough is so troublesome and distressing that ACE inhibitor therapy may have to be discontinued. Any patients in whom medication is suspected as the cause of a cough should be referred to their doctor. Angiotensin 2 receptor antagonists, which have similar properties to ACE inhibitors and which do not affect bradykinin, can be used as an alternative preparation if cough is a problem.

When to refer
Cough lasting 2 weeks or more and not improving
Sputum (yellow, green, rusty or blood-stained) (for further details, see p. 61)
Chest pain
Shortness of breath
Wheezing
Whooping cough or croup
Recurrent nocturnal cough
Suspected adverse drug reaction
Failed medication

After a series of questions the pharmacist should be in a position to decide whether treatment or referral is the best option.

Treatment timescale

Depending on the length of time the patient has had the cough and once the pharmacist has recommended an appropriate treatment, patients should see their doctor 2 weeks after the cough started if it has not improved.

Management

Pharmacists are well aware of the debate about the clinical efficacy of the cough remedies available OTC. In particular, the lack of scientific evidence that expectorants have any effect and the use of combinations with apparently contradictory ingredients have been cited. However, many people who visit the pharmacy for advice do so because they want some relief from their symptoms and, while the effectiveness of cough remedies remains unproven, they can have a useful placebo effect.

The choice of treatment depends on the type of cough. Suppressants (e.g. *pholcodine*) are used to treat unproductive coughs, while expectorants such as *guaifenesin* (*guaiphenesin*) are used in the treatment of productive coughs. The pharmacist should check that the preparation contains an appropriate dose, since some products contain subtherapeutic amounts. Demulcents like *Simple Linctus* that soothe the throat are particularly useful in children and pregnant women as they contain no active ingredients.

The *BNF* gives the following guidance.

Expectorants: A simple expectorant mixture may serve a useful placebo function and is inexpensive.

Suppressants: Where there is no identifiable cause (underlying disorder), cough suppressants may be useful; e.g. if sleep is disturbed.

Demulcents: Preparations such as *simple linctus* have the advantage of being harmless and inexpensive. Paediatric *simple linctus* is particularly useful in children, and sugar-free versions are available.

Productive coughs should not be treated with cough suppressants because the result is pooling and retention of mucus in the lungs and a higher chance of infection, especially in chronic bronchitis.

There is no logic in using expectorants (which promote coughing) and suppressants (which reduce coughing) together as they have opposing effects. Therefore, products that contain both are not therapeutically sound.

Cough suppressants

Controlled trials have not confirmed any significant effect of cough suppressants over placebo in symptom reduction.

Codeine/pholcodine

Pholcodine has several advantages over *codeine* in that it produces fewer side-effects (even at OTC doses *codeine* can cause constipation and, at high doses, respiratory depression) and *pholcodine* is less liable to be abused. For these reasons, *codeine* is best avoided in the treatment of children's coughs and should never be used in children under 1 year. Both *pholcodine* and *codeine* can induce drowsiness, although in practice this does not appear to be a problem. Nevertheless, it is sensible to give an appropriate warning. *Codeine* is well known as a drug of abuse and many pharmacists choose not to recommend it. Sales often have to be refused because of knowledge or likelihood of abuse. *Pholcodine* can be given at a dose of 5 mg to children over 2 years of age (5 mg of *pholcodine* is contained in 5 ml of *pholcodine linctus BP*). Adults may take doses of up to 15 mg three or four times daily. The drug has a long half-life and may be more appropriately given as a twice-daily dose.

Dextromethorphan

Dextromethorphan is less potent than *pholcodine* and *codeine*. It is generally non-sedating and has few side-effects. Occasionally, drowsiness had been reported but, as for *pholcodine*, this does not seem to be a problem in practice. *Dextromethorphan* can be given to children of 2 years and over. *Dextromethorphan* was generally thought to have a low potential for abuse. However, there have been rare reports of mania following abuse and consumption of very large quantities, and pharmacists should be aware of this possibility if regular purchases are made.

Demulcents

Preparations such as *glycerin*, *lemon and honey* or *Simple Linctus* are popular remedies and are useful for their soothing effect. They do not contain any active ingredient and are considered to be safe in children and pregnant women. Their pleasant taste makes them particularly suitable for children but their high syrup content should be noted.

Expectorants

Two mechanisms have been proposed for expectorants. They may act directly by stimulating bronchial mucus secretion, leading to increased liquefying of sputum, making it easier to cough up. Alternatively, they may act indirectly via irritation of the gastrointestinal (GI) tract, which has a subsequent action on the respiratory system resulting in increased mucus secretion. This latter theory has less convincing evidence than the former to support it.

Guaifenesin (guaiphenesin)

Guaifenesin is commonly found in cough remedies. In adults, the dose required to produce expectoration is 100–200 mg, so in order to have a theoretical chance of effectiveness, any product recommended should contain a sufficiently high dose. Some OTC preparations contain subtherapeutic doses. In the USA, the Food and Drugs Administration (FDA, the licensing body) reviewed OTC medicines, and evidence from studies supporting *guaifenesin* was sufficiently strong for the FDA to be convinced of its efficacy.

Cough remedies: other constituents

Antihistamines

Examples used in OTC products include *diphenhydramine* and *promethazine*. Theoretically these reduce the frequency of coughing and have a drying effect on secretions, but in practice they also induce drowsiness. Combinations of antihistamines with expectorants are illogical and best avoided. A combination of an antihistamine and a cough suppressant may be useful in that antihistamines can help to dry up secretions and, when the combination is given as a night-time dose if the cough is disturbing sleep, a good night's sleep will invariably follow. This is one of the rare occasions when a side-effect proves useful. The non-sedating antihistamines are less effective in symptomatic treatment of coughs and colds because of their less pronounced anticholinergic actions.

Interactions. Traditional antihistamines should not be used by patients who are taking *phenothiazines* and tricyclic antidepressants because of additive anticholinergic and sedative effects. Increased sedation will also occur with any drug that has a CNS depressant effect. Alcohol should be avoided because this will also lead to increased drowsiness. See p. 23–4 for more details of interactions, side-effects and contraindications of antihistamines.

Sympathomimetics

Pseudoephedrine is the most commonly used oral decongestant included in cough and cold remedies (see also p. 21) for its bronchodilatory and decongestant actions. It has a stimulant effect that may lead to a sleepless night if taken close to bedtime. It may be useful if the patient has a blocked nose as well as a cough and an expectorant/decongestant combination can be useful in productive coughs. Sympathomimetics can cause raised blood pressure, stimulation of the heart and alterations in diabetic control. Oral sympathomimetics should be used with caution in patients with

diabetes
coronary heart disease (e.g. angina)
hypertension
hyperthyroidism

Interactions. Sympathomimetics should be avoided by patients taking
monoamine oxidase inhibitors (e.g. *phenelzine*)
reversible inhibitors of monoamine oxidase A (e.g. *moclobemide*)
beta-blockers
tricylic antidepressants (e.g. *amitriptyline*); a theoretical interaction which does not seem to cause problems in practice.

Theophylline

Theophylline is sometimes included in cough remedies for its bronchodilator effect. OTC medicines containing *theophylline* should not be taken at the same time as prescribed *theophylline* since toxic blood levels and side-effects may occur. The action of *theophylline* can be potentiated by some drugs, e.g. *cimetidine* and *erythromycin*.

Levels of *theophylline* in the blood are reduced by smoking and drugs such as *carbamazepine*, *phenytoin* and *rifampicin* that induce liver enzymes, so that the metabolism of *theophylline* is increased and lower serum levels result.

Side-effects include GI irritation, nausea, palpitations, insomnia and headaches. The adult dose is typically 120 mg three or four times daily. It is not recommended in children. Before selling any OTC product containing *theophylline*, check that the patient is not already taking the drug on prescription.

Practical points

Diabetics

In short-term acute conditions the amount of sugar in cough medicines is relatively unimportant. Diabetic control is often upset during infections and the additional sugar is not now considered to be a major problem. Nevertheless, many diabetic patients may prefer a sugar-free product, as will many other customers who wish to reduce sugar intake for themselves and their children, and many such products are now available. As part of their contribution to improving dental health, pharmacists can ensure that they stock and display a range of sugar-free medicines.

Steam inhalations

These can be useful, particularly in productive coughs. Some clinical trials indicate benefit and none have found any harm. The steam helps

to liquefy lung secretions and patients find the warm moist air comforting. While there is no evidence that the addition of medications to the water produces a better clinical effect than steam alone, some may prefer to add a preparation such as *menthol and eucalyptus* or a proprietary inhalant. One teaspoonful of inhalant should be added to a pint of hot (not boiling) water and the steam inhaled. Apart from the risk of scalding, boiling water volatilises the constituents too quickly. A cloth or towel can be put over the head to trap the steam.

Fluid intake

Maintaining a high fluid intake helps to hydrate the lungs and hot drinks can have a soothing effect. General advice to patients with coughs and colds should be to increase fluid intake by around 2 L a day.

Coughs in practice

Case 1

Mrs Patel, a woman in her early twenties, asks what you can recommend for her son's cough. On questioning you find out that her son, Dillip, aged 4, has had a cough on and off for a few weeks. He gets it at night and it is disturbing his sleep although he doesn't seem to be troubled during the day. She took Dillip to the doctor about 3 weeks ago, and the doctor explained that antibiotics were not needed and that the cough would get better by itself. The cough is not productive and she has given Dillip some Tixylix before he goes to bed but the cough is no better. Dillip is not taking any other medicines. He has no pain on breathing or shortness of breath. He has had a cold recently.

The pharmacist's view

This is a 4-year-old child who has a night-time cough of several weeks' duration. The doctor's advice was appropriate at the time Dillip saw him. However, referral to the doctor would be advisable because the cough is only present during the night. A recurrent cough in a child at night can be a symptom of asthma, even if wheezing is not present. It is possible that the cough is occurring as a result of bronchial irritation following his recent viral URTI. Such a cough can last for up to 6 weeks and is more likely to occur in those who have asthma or a family history of atopy (a predisposition to sensitivity to certain common allergens such as house dust mite, animal dander and pollen). Nevertheless, the cough has been present for several weeks without improvement and medical advice is needed.

The doctor's view

Asthma is an obvious possibility. It would be interesting to know if anyone else in the family suffers from asthma, hay fever or eczema and whether Dillip has ever had hay fever or eczema. Any of these features would make the diagnosis more likely. Mild asthma may present in this way without the usual symptoms of shortness of breath and wheezing.

An alternative diagnosis could still include a viral URTI. Most coughs are more troublesome and certainly more obvious during the night. This can falsely give the impression that the cough is only nocturnal. It should also be remembered that both diagnoses could be correct, as a viral infection often initiates an asthmatic reaction. Because the diagnosis is uncertain and inhaled oral steroids may be appropriate, referral to the doctor is advisable.

If, after further history-taking and examination, the doctor feels that asthma is a possibility, then treatment would be based on the British Thoracic Society guidelines, which are summarised in the *BNF*. Naturally this would only be carried out after full discussion and agreement with the parents. Many parents are loath to have their child labelled as an asthma sufferer. The next problem is to prescribe a suitable inhalation device for a 4-year-old child. This may be an inhaler with a spacer device or a breath-actuated inhaler or a dry-powder inhaler. It would be usual to try a twice-daily dosage for 2–3 weeks and then review for future management.

The parent's view

'I was hoping the pharmacist could recommend something but she seemed to think Dillip should see the doctor. She didn't really explain why though.'

Case 2

A man aged about 25 asks if you can recommend something for his cough. He sounds as if he has a bad cold and looks a bit pale. You find out that he has had the cough for a few days, with a blocked nose and a sore throat. He has no pain on breathing or shortness of breath. The cough was chesty to begin with but he tells you it is now tickly and irritating. He has not tried any medicines and is not taking any medicines from the doctor.

The pharmacist's view

This patient has the symptoms of the common cold and none of the danger signs associated with a cough that would make referral necessary. He is not taking any medicines, so the choice of possible

treatments is wide. You could recommend something to treat his congested nose as well as his cough, e.g. a cough suppressant and a sympathomimetic. *Simple Linctus* and a systemic or topical decongestant would also be a possible option. If a topical decongestant were to be recommended, he should be warned to use it for no longer than 1 week to avoid the possibility of rebound congestion.

The doctor's view

The action suggested by the pharmacist is very reasonable. It may be worthwhile explaining that he is suffering from a viral infection that is self-limiting and should be better within a few days. If he is a smoker it would be an ideal time to encourage him to stop.

Sore throat

Most people with a sore throat do not consult the doctor – only about 5% do so and many will consult their pharmacist. Most sore throats that present in the pharmacy will be caused by viral infection (90%), with only one in ten being due to bacterial infection, so that treatment with antibiotics is unnecessary in most cases. Clinically it is almost impossible to differentiate between the two. The majority of infections are self-limiting. Sore throats are often associated with other symptoms of a cold.

Once the pharmacist has excluded more serious conditions, an appropriate OTC medicine can be recommended.

What you need to know
Age (approximate)
Baby, child, adult
Duration
Severity
Associated symptoms
Cold, congested nose, cough
Difficulty in swallowing
Hoarseness
Fever
Previous history
Smoking habit
Present medication

Significance of questions and answers

Age

Establishing who the patient is will influence the choice of treatment and whether referral is necessary. Streptococcal (bacterial) throat infections are more likely in children of school age.

Duration

Most sore throats are self-limiting and will be better within 7–10 days. If it has been present for longer, then the patient should be referred to the doctor for further advice.

Severity

If the sore throat is described as being extremely painful, especially in the absence of cold, cough and catarrhal symptoms, then referral should be recommended when there is no improvement within 24–48 h.

Associated symptoms

Cold, catarrh and cough may be associated with a sore throat. There may also be a fever and general aches and pains. These are in keeping with a minor self-limiting viral infection.

Hoarseness of longer than 3 weeks' duration and difficulty in swallowing (dysphagia) are both indications for referral.

Previous history

Recurrent bouts of infection (tonsillitis) would mean that referral is best.

Smoking habit (see also 'Smoking cessation')

Smoking will exacerbate a sore throat and if the patient smokes it can be a good time to offer advice and information about quitting. Surveys indicate that two-thirds of people who smoke want to stop.

Present medication

The pharmacist should establish whether any medication has been tried already to treat the symptoms. If one or more medicines have been tried without improvement, then referral to the doctor should be considered.

Current prescriptions are important and the pharmacist should question the patient carefully about them. Steroid inhalers (e.g. *beclometasone* (*beclomethasone*) or *budesonide*) can cause hoarseness and candidal infections of the throat and mouth. Generally they tend to do this at high doses. Such infections can be prevented by rinsing the mouth with water after using the inhaler. It is also worthwhile checking the patient's inhaler technique. Poor technique with metered-dose inhalers can lead to large amounts of the inhaled drug being deposited at the back of the throat. If you suspect this is the problem, discuss with the doctor whether a device that will help coordination or perhaps a different inhaler might be needed.

Any patient taking *carbimazole* and presenting with a sore throat should be referred immediately. A rare side-effect of *carbimazole* is agranulocytosis (suppression of white cell production in the bone marrow). The same principle applies to any drug that can cause

agranulocytosis. A sore throat in such patients can be the first sign of a life-threatening infection.

Symptoms for direct referral

Hoarseness

Hoarseness is caused when there is inflammation of the vocal cords in the larynx (laryngitis). Laryngitis is typically caused by a self-limiting viral infection. It is usually associated with a sore throat and a hoarse, diminished voice. Antibiotics are of no value and symptomatic advice (see 'Management' below), which includes resting the voice, should be given. The infection usually settles within a few days and referral is not necessary.

When this infection occurs in babies, infants or small children, it can cause croup (acute laryngotracheitis) and present difficulty in breathing and stridor (see p. 31). In this situation referral is essential.

When hoarseness persists for more than 3 weeks, especially when it is not associated with an acute infection, referral is necessary. There are many causes of persistent hoarseness, some of which are serious. For example, laryngeal cancer can present in this way and hoarseness may be the only early symptom. A doctor will normally refer the patient to a ear, nose and throat (ENT) specialist for accurate diagnosis.

Dysphagia

Difficulty in swallowing can occur in severe throat infection. It can happen when an abscess develops in the region of the tonsils (quinsy) as a complication of tonsillitis. This will usually result in a hospital admission where an operation to drain the abscess may be necessary and high-dose parenteral antibiotics may be given.

Glandular fever (infectious mononucleosis) is one viral cause of sore throat that often produces marked discomfort and may cause dysphagia. If this is suspected, referral is necessary for an accurate diagnosis.

Most bad sore throats will cause discomfort on swallowing but not true difficulty and do not necessarily need referral unless there are other reasons for concern. Dysphagia, when not associated with a sore throat, always needs referral (see p. 73).

Appearance of throat

It is commonly thought that the presence of white spots, exudates or pus on the tonsils is an indication for referral or a means of differentiating between viral and bacterial infection, but this is not always so. Unfortunately the appearance can be the same in both types

of infection and sometimes the throat can appear almost normal without exudates in a streptococcal (bacterial) infection.

Thrush

An exception not to be forgotten is candidal (thrush) infection that produces white plaques. However, these are rarely confined to the throat alone and are most commonly seen in babies or the very elderly. It is an unusual infection in young adults and may be associated with more serious disorders that interfere with the body's immune system, e.g. leukaemia, HIV and acquired immune deficiency syndrome (AIDS), or with immunosuppressive therapy (e.g. steroids). The plaques may be seen in the throat and on the gums and tongue. When they are scraped off, the surface is raw and inflamed. Referral is advised if thrush is suspected and the throat is sore and painful. See p. 304 for more information about oral thrush.

Glandular fever

Glandular fever is a viral throat infection caused by the Epstein–Barr virus (EBV). It is well known because of its tendency to leave its victims debilitated for some months afterwards and its association with the controversial condition myalgic encephalomyelitis (ME). The infection typically occurs in teenagers and young adults, with peak incidence between the ages of 14 and 21. It is known as the 'kissing disease'! A severe sore throat may follow 1 or 2 weeks of general malaise. The throat may become very inflamed with creamy exudates present. There may be difficulty in swallowing because of the painful throat. Glands (lymph nodes) in the neck and axillae (armpits) may be enlarged and tender. The diagnosis can be confirmed with a blood test, although this may not become positive until 1 week after the onset of the illness. Antibiotics are of no value; in fact if *ampicillin* is given during the infection, a measles-type rash is likely to develop in 80% of those with glandular fever. Treatment is aimed at symptomatic relief.

When to refer
Sore throat lasting 1 week or more
Recurrent bouts of infection
Hoarseness of more than 3 weeks' duration
Difficulty in swallowing (dysphagia)
Failed medication

Treatment timescale

Patients should see their doctor in 1 week if the sore throat has not improved.

Management

Most sore throats are caused by viral infections and are self-limiting in nature with 90% of patients becoming well within 1 week of the onset of symptoms. The pharmacist can offer a selection of treatments aimed at providing some relief from discomfort and pain until the infection subsides. Oral analgesics are first-line. A systematic review found that simple analgesics (*paracetamol*, *aspirin* and *ibuprofen*) are very effective at reducing the pain from sore throat. Lozenges and pastilles have a soothing effect. There is some evidence that *benzydamine spray* is effective in relieving sore throat pain.

Oral analgesics

Paracetamol, *aspirin* and *ibuprofen* have been shown in clinical trials to provide rapid and effective relief of pain in sore throat. A systematic review showed no benefit of adding other analgesic constituents. The patient can be advised to take the analgesic regularly to sustain pain relief. (For a discussion of doses, side-effects, cautions and contraindications for simple analgesics, see p. 201.) *Flurbiprofen lozenges* were reclassified from POM to P for sore throat for adults and children aged 12 and over. They contain 8.75 mg of *flurbiprofen* and one lozenge is sucked or dissolved in the mouth every 3–6 h as required, to a maximum of five lozenges. *Flurbiprofen lozenges* can be used for up to 3 days at a time.

Mouthwashes and sprays

Anti-inflammatory (e.g. benzydamine)

Benzydamine is an anti-inflammatory agent that is absorbed through the skin and mucosa and has been shown to be effective in reducing pain and inflammation in conditions of the mouth and throat. Side-effects have occasionally been reported and include numbness and stinging of the mouth and throat. *Benzydamine spray* can be used in children of 6 years and over, whereas the mouthwash may only be recommended for children over 12.

Local anaesthetic (e.g. benzocaine)

Benzocaine and *lidocaine* are available in throat sprays.

Lozenges and pastilles

Lozenges and pastilles can be divided into three categories:
antiseptic (e.g. *cetylpyridinium*)
antifungal (e.g. *dequalinium*)
local anaesthetic (e.g. *benzocaine*).

Lozenges and pastilles are commonly used OTC treatments for sore throats and, where viral infection is the cause, the main use of antibacterial and antifungal preparations is to soothe and moisten the throat. Lozenges containing *cetylpyridinium chloride* have been shown to have antibacterial action.

Local anaesthetic lozenges will numb the tongue and throat and can help to ease soreness and pain. *Benzocaine* can cause sensitisation and such reactions have sometimes been reported.

Caution. Iodised throat lozenges should be avoided in pregnancy because they have the potential to affect the thyroid gland of the fetus.

Practical points

Diabetes

Mouthwashes and gargles are suitable and can be recommended. Sugar-free pastilles are available but the sugar content of such products is not considered important in short-term use.

Mouthwashes and gargles

Patients should be reminded that mouthwashes and gargles should not be swallowed. The potential toxicity of OTC products of this type is low and it is unlikely that problems would result from swallowing small amounts. However, there is a small risk of systemic toxicity from swallowing products containing *iodine*. Manufacturers' recommendations about whether to use the mouthwash diluted or undiluted should be checked and appropriate advice given to the patient.

Sore throats in practice

Case 1

A woman asks your advice about her son's very sore throat. He is 15 years old and is at home in bed. She says he has a temperature and that she can see creamy white matter at the back of his throat. He seems lethargic and hasn't been eating very well because his throat has been so painful. The sore throat started about 5 days ago and he has been in bed since yesterday. The glands on his neck are swollen.

The pharmacist's view

It would be best for this woman's son to be seen by the doctor. The symptoms appear to be severe and he is ill enough to be in bed. Glandular fever is common in this age group and is a possibility. In the meantime you might consider recommending some *paracetamol* in soluble or syrup form to make it easier to swallow. The analgesic and antipyretic effects would both be useful in this case.

The doctor's view

The pharmacist is sensible in recommending referral. The description suggests a severe tonsillitis, which will be caused by either a bacterial or viral infection. If it turns out to be viral, then glandular fever is a strong possibility. The doctor should check out the ideas, concerns and expectations of the mother and son and then explain the likely causes and treatment. Often it is not possible to rule out a bacterial (streptococcal) infection at this stage and it is safest to prescribe *oral penicillin*, or *erythromycin* if the patient is allergic to *penicillin*. Depending on the availability of laboratory services, the doctor may take a throat swab, which would identify a bacterial infection. If the infection has gone on for nearly 1 week, then a blood test can identify infectious mononucleosis (glandular fever). Although there is no specific treatment for glandular fever, it is helpful for the patient to know what is going on and when to expect full recovery.

Case 2

A teenage girl comes into your shop with her mother. The girl has a sore throat which started yesterday. There is slight reddening of the throat. Her mother tells you she had a slight temperature during the night. She also has a blocked nose and has been feeling general aching. She has no difficulty in swallowing and is not taking any medicines, either prescribed or OTC.

The pharmacist's view

It sounds as though this girl has a minor URTI. The symptoms described should remit within a few days. In the meantime, it would be reasonable to recommend a systemic analgesic, perhaps in combination with a decongestant.

The doctor's view

The pharmacist's assessment sounds correct. Because she has a blocked nose, a viral infection is most likely. Many patients attend their doctor with similar symptoms understandably hoping for a quick cure with antibiotics, which have no place in such infections.

Case 3

A middle-aged woman comes to ask your advice about her husband's bad throat. He has had a hoarse gruff voice for about 1 month and has tried various lozenges and pastilles without success. He has been a heavy smoker (at least a pack a day) for over 20 years and works as a bus driver.

The pharmacist's view

This woman should be advised that her husband should see his doctor. The symptoms that have been described are not those of a minor throat infection. On the basis of the long duration of the problem and of the unsuccessful use of several OTC treatments, it would be best for this man to see his doctor for further investigation.

The doctor's view

A persistent alteration in voice, with hoarseness, is an indication for referral to an ENT specialist. This man should have his vocal cords examined, which requires skill and special equipment that most family doctors do not have. It is possible he may have a cancer on his vocal cords (larynx), especially as he is a smoker.

Allergic rhinitis

Seasonal allergic rhinitis (hay fever) affects 10–15% of people in the UK and millions of patients rely on OTC medicines for treatment. The symptoms of allergic rhinitis occur after an inflammatory response involving the release of histamine which is initiated by allergens being deposited on the nasal mucosa. Allergens responsible for seasonal allergic rhinitis include grass pollens, tree pollens and fungal mould spores. Perennial allergic rhinitis occurs when symptoms are present all year round and is commonly caused by the house dust mite, animal dander and feathers. Some patients may suffer from perennial rhinitis which becomes worse in the summer months.

What you need to know
Age (approximate)
Baby, child, adult
Duration
Symptoms
Rhinorrhoea (runny nose)
Nasal congestion
Nasal itching
Watery eyes
Irritant eyes
Discharge from the eyes
Sneezing
Previous history
Associated conditions
Eczema
Asthma
Medication

Significance of questions and answers

Age

Symptoms of allergic rhinitis may start at any age, although its onset is more common in children and young adults (the condition is most common in those in their twenties and thirties). There is frequently

a family history of atopy in allergic rhinitis sufferers. Thus children of allergic rhinitis sufferers are more likely to have the condition. The condition often improves or resolves as the child gets older. The age of the patient must be taken into account if any medication is to be recommended. Young adults who may be taking examinations should be borne in mind, because treatment that may cause drowsiness is best avoided in these patients.

Duration

Sufferers will often present with seasonal rhinitis as soon as the pollen count becomes high. Symptoms may start in April when tree pollens appear and the hay fever season may start 1 month earlier in the south than in the north of England. Hay fever peaks between the months of May and July, when grass pollen levels are highest and spells of good weather commonly cause patients to seek the pharmacist's advice. Anyone presenting with a summer cold, perhaps of several weeks' duration, may be suffering from hay fever. Fungal spores are also a cause and are present slightly later, often until September.

People can suffer from what they think are mild cold symptoms for a long period, without knowing they have perennial rhinitis.

The PRODIGY classification of allergic rhinitis:
Intermittent. Occurs less than 4 days per week or for less than 4 weeks
Persistent. Occurs more than 4 days per week and for more than 4 weeks
Mild. All of the following – normal sleep; normal daily activities, sport, leisure; normal work and school; symptoms not troublesome
Moderate. One or more of the following – abnormal sleep; impairment of daily activities, sport, leisure; problems caused at work or school; troublesome symptoms
(*Source*: www.prodigy.nhs.uk)

Symptoms

Rhinorrhoea

A runny nose is a commonly experienced symptom of allergic rhinitis. The discharge is often thin, clear and watery, but can change to a thicker, coloured, purulent one. This suggests a secondary infection, although the treatment for allergic rhinitis is not altered. There is no need for antibiotic treatment.

Nasal congestion

The inflammatory response caused by the allergen produces vasodilatation of the nasal blood vessels and so results in nasal congestion. Severe congestion may result in headache and occasionally earache. Secondary infection such as otitis media and sinusitis can occur (see p. 19).

Nasal itching

Nasal itching commonly occurs. Irritation is sometimes experienced on the roof of the mouth.

Eye symptoms

The eyes may be itchy and also watery; it is thought these symptoms are a result of tear duct congestion and also a direct effect of pollen grains being caught in the eye, setting off a local inflammatory response. Irritation of the nose by pollen probably contributes to eye symptoms too. People who suffer severe symptoms of allergic rhinitis may be hypersensitive to bright light (photophobic) and find that wearing dark glasses is helpful.

Sneezing

In hay fever the allergic response usually starts with symptoms of sneezing, then rhinorrhoea, progressing to nasal congestion. Classically, symptoms of hay fever are more severe in the morning and in the evening. This is because pollen rises during the day after being released in the morning and then settles at night. Patients may also describe a worsening of the condition on windy days as pollen is scattered, and a reduction in symptoms when it rains, or after rain, as the pollen clears. Conversely, in those allergic to fungal mould spores the symptoms worsen in damp weather.

Previous history

There is commonly a history of hay fever going back over several years. However, it can occur at any age, so the absence of any previous history does not necessarily indicate that allergic rhinitis is not the problem. The incidence of hay fever has risen during the last decade. Pollution, particularly in urban areas, is thought to be at least partly responsible for the trend.

Perennial rhinitis can usually be distinguished from seasonal rhinitis by questioning about the timing and the occurrence of symptoms. People who have had hay fever before will often consult the pharmacist when symptoms are exacerbated in the summer months.

Danger symptoms/associated conditions

When associated symptoms such as tightness of the chest, wheezing, shortness of breath or coughing are present, immediate referral is advised. These symptoms may herald the onset of an asthmatic attack.

Wheezing

Difficulty with breathing, possibly with a cough, suggests an asthmatic attack. Some sufferers only experience asthma attacks during the hay fever season (seasonal asthma). These episodes can be quite severe and require referral. Seasonal asthmatics often do not have appropriate medication at hand as their attacks occur so infrequently, which puts them at greater risk.

Earache and facial pain

As with colds and flu (see p. 19), allergic rhinitis can be complicated by secondary bacterial infection in the middle ear (otitis media) or the sinuses (sinusitis). Both these conditions cause persisting severe pain.

Purulent conjunctivitis

Irritated watery eyes are a common accompaniment to allergic rhinitis. Occasionally this allergic conjunctivitis is complicated by a secondary infection. When this occurs, the eyes become more painful (gritty sensation) and redder, and the discharge changes from being clear and watery to coloured and sticky (purulent). Referral is needed.

Medication

The pharmacist must establish whether any prescription or OTC medicines are being taken by the patient. Potential interactions between prescribed medication and antihistamines can therefore be identified.

It would be useful to know if any medicines have been tried already to treat the symptoms, especially where there is a previous history of allergic rhinitis. In particular, the pharmacist should be aware of the potentiation of drowsiness by some antihistamines combined with other medicines. This can lead to increased danger in certain occupations and driving.

Failed medication

If symptoms are not adequately controlled with OTC preparations, an appointment with the doctor may be worthwhile. Such an appointment is useful to explore the patient's beliefs and preconceptions about hay fever and its management. It is also an opportunity to suggest ideas for the next season.

When to refer
Wheezing and shortness of breath
Tightness of chest
Painful ear
Painful sinuses
Purulent conjunctivitis
Failed medication

Treatment timescale

Improvement in symptoms should occur within a few days. If no improvement is noted after 5 days, the patient might be referred to the doctor for other therapy.

Management

Management is based on whether symptoms are intermittent or persistent and mild or moderate. Options include antihistamines, nasal steroids and *sodium cromoglicate* (*sodium cromoglycate*) in formulations for the nose and eyes. OTC antihistamines and steroid nasal sprays are effective in the treatment of allergic rhinitis. The choice of treatment should be rational and based on the patient's symptoms and previous history where relevant.

Many cases of hay fever can be managed with OTC treatment and it is reasonable for the pharmacist to recommend treatment. Patients with symptoms that do not respond to OTC products can be referred to the doctor at a later stage. Pharmacists also have an important role in ensuring that patients know how to use any prescribed medicines correctly (e.g. steroid nasal sprays, which must be used continuously for the patient to benefit).

Antihistamines

Many pharmacists would consider these drugs to be the first-line treatment for mild to moderate and intermittent symptoms of allergic rhinitis. They are effective in reducing sneezing and rhinorrhoea, less so in reducing nasal congestion. Non-sedating antihistamines available OTC include *acrivastine*, *cetirizine* and *loratadine*. All are effective in reducing the troublesome symptoms of hay fever and have the advantage of causing less sedation than some of the older antihistamines.

Cetirizine and *loratadine* are taken once daily while *acrivastine* is taken three times daily. Recommended doses should not be exceeded.

For sale OTC, *acrivastine*, *cetirizine* and *loratadine* can be recommended for children over 12 years.

While drowsiness is an extremely unlikely side-effect of any of the three drugs, patients might be well advised to try the treatment for a day before driving or operating machinery. Recent evidence suggests that *loratidine* is less likely to have any sedative effect than the other two, but the incidence of drowsiness is extremely small.

Acrivastine, *cetirizine* and *loratadine* may be used for other allergic skin disorders such as perennial rhinitis and urticaria.

Older antihistamines, such as *promethazine* and *diphenhydramine*, have a greater tendency to produce sedative effects. Indeed, both drugs are available in the UK in OTC products promoted for the management of temporary sleep disorders (see p. 311). The shorter half-life of *diphenhydramine* (5–8 h compared with 8–12 h of *promethazine*) should mean less likelihood of a morning hangover/drowsiness effect.

Other older antihistamines are relatively less sedative, such as *chlorphenamine* (*chlorpheniramine*) and *clemastine*. Patients may develop tolerance to their sedation effects. Anticholinergic activity is very much lower among the newer drugs compared to the older drugs.

Interactions. The potential sedative effects of older antihistamines are increased by alcohol, hypnotics, sedatives and anxiolytics. The alcohol content of some OTC medicines should be remembered.

The plasma concentration of non-sedating antihistamines may be increased by *ritonavir*; plasma concentration of *loratadine* may be increased by *amprenavir* and *cimetidine*. There is a theoretical possibility that antihistamines can antagonise the effects of *betahistine*.

Side-effects. The major side-effect of the older antihistamines is their potential to cause drowsiness. Their anticholinergic activity may result in a dry mouth, blurred vision, constipation and urinary retention. These effects will be increased if the patient is already taking another drug with anticholinergic effects (e.g. tricyclic antidepressants, neuroleptics).

At very high doses, antihistamines have CNS excitatory rather than depressive effects. Such effects seem to be more likely to occur in children. At toxic levels, there have been reports of fits being induced. As a result, it has been suggested that antihistamines should be used with care in epileptic patients. However, this appears to be a largely theoretical risk.

Antihistamines are best avoided by patients with narrow- (closed-) angle glaucoma, since the anticholinergic effects produced can cause an increase in intraocular pressure. They should be used with caution in patients with liver disease or prostatic hypertrophy.

Decongestants

Oral or topical decongestants may be used to reduce nasal congestion alone or in combination with an antihistamine. They can be useful in patients starting to use a preventer such as a nasal corticosteroid (e.g. *beclometasone*) or *sodium cromoglicate* where congestion can prevent the drug from reaching the nasal mucosa. Topical decongestants can cause rebound congestion, especially with prolonged use. They should not be used for more than 1 week. Oral decongestants are occasionally included such as *pseudoephedrine*. Their use, interactions and adverse effects are considered in the section on 'Colds and flu' (see pp. 21–2).

Eye drops containing an antihistamine and sympathomimetic combination are available and may be of value in troublesome eye symptoms, particularly when symptoms are intermittent. The sympathomimetic acts as a vasoconstrictor, reducing irritation and redness. Some patients find that the vasoconstrictor causes painful stinging when first applied. Eye drops that contain a vasoconstrictor should not be used in patients who have glaucoma or who wear soft contact lenses.

Steroid nasal sprays

Beclometasone nasal spray (aqueous pump rather than aerosol version), *fluticasone metered nasal spray* and *triamcinolone aqueous nasal spray* can be used for the treatment of seasonal allergic rhinitis.

A steroid nasal spray is the treatment of choice for moderate to severe nasal symptoms that are continuous. The steroid acts to reduce inflammation that has occurred as a result of the allergen's action. Regular use is essential for full benefit to be obtained and treatment should be continued throughout the hay fever season. If symptoms of hay fever are already present, the patient needs to know that it is likely to take several days before the full treatment effect is reached.

Dryness and irritation of the nose and throat, and nosebleeds have occasionally been reported; otherwise side-effects are rare. *Beclometasone*, *fluticasone* and *triamcinolone nasal sprays* can be used in patients over 18 years of age for up to 3 months. They should not be recommended for pregnant women or for anyone with glaucoma.

Patients are sometimes alarmed by the term 'steroid', associating it with potent oral steroids and possible side-effects. Therefore the pharmacist needs to take account of these concerns in explanations about the drug and how it works.

Sodium cromoglicate

Sodium cromoglicate is available OTC as nasal drops or spray and as eye drops. An OTC nasal spray product containing *sodium cromoglicate*

with a small amount of decongestant is available. The amount of decongestant is said to be too small to produce rebound congestion. *Cromoglicate* can be effective as a prophylactic if used correctly. It should be started at least 1 week before the hay fever season is likely to begin and then used continuously. There seem to be no significant side-effects, although nasal irritation may occasionally occur.

Cromoglicate eye drops are effective for the treatment of eye symptoms that are not controlled by antihistamines. *Cromoglicate* should be used continuously to obtain full benefit. The eye drops should be used four times a day. The eye drops contain the preservative *benzalkonium chloride* and should not be used by wearers of soft contact lenses.

Topical antihistamines

Nasal treatments

Azelastine and *levocabastine* are used in allergic rhinitis. The *BNF* suggests that treatment should begin 2–3 weeks before the start of the hay fever season. *Azelastine* and *levocabastine* are available as aqueous nasal sprays. Their place in treatment is likely to be for mild and intermittent symptoms. *Azelastine* can be used in adults and children over 5 years of age; *levocabastine* can be used in adults and children over 12 years of age. Advise the patient to keep the head upright during use to prevent the liquid trickling into the throat and causing an unpleasant taste.

Eye treatments

Levocabastine eye drops can be used in children over 12 years of age and adults for the treatment of seasonal allergic conjunctivitis.

Further advice

1 Car windows and air vents should be kept closed while driving. Otherwise a high pollen concentration inside the car can result.

2 Where house dust mite is identified as a problem, regular cleaning of the house to maintain dust levels at a minimum can help. Special vacuum cleaners are now on sale that are claimed to be particularly effective.

Hay fever in practice

Case 1

A young man presents in late May. He asks what you can recommend for hay fever. On questioning, he tells you that he has not had hay fever before, but some of his friends get it and he thinks he has the

same thing. His eyes have been itching a little and are slightly watery, and he has been sneezing for a few days. His nose has been runny and now feels quite blocked. He will not be driving, but is a student at the local sixth-form college and has exams coming up next week. He is not taking any medicines.

The pharmacist's view

This young man is experiencing the classic symptoms of hay fever for the first time. The nasal symptoms are causing the most discomfort; he has had rhinorrhoea and now has congestion so it would be reasonable to recommend a corticosteroid nasal spray providing he is aged 18 or over. If he is under 18, an oral or topical antihistamine could be recommended, bearing in mind that he is sitting for exams soon and so any preparation that might cause drowsiness is best avoided. His eyes are slightly irritated, but the symptoms are not very troublesome. You know that he is not taking any other medicines, so you could recommend *acrivastine*, *loratadine* or *cetirizine*. If the symptoms are not better in a few days, he should see the doctor.

The doctor's view

A corticosteroid nasal spray is likely to be more effective. If he cannot use the OTC product because he is under 18, *acrivastine*, *loratadine* or *cetirizine* would be worth a try. Even though they are generally non-sedating they can cause drowsiness in some patients. The student should be advised not to take his first dose just before the exam! If his symptoms do not settle, then referral is appropriate. He may benefit from *sodium cromoglicate eye drops* if his eye symptoms are not fully controlled by the antihistamine. It is often worthwhile trying an older antihistamine as an alternative because some people are unaffected by the sedative properties, or an alternative non-sedating one such as *fexofenadine*.

Case 2

A woman in her early thirties wants some advice. She tells you that she has hay fever and a blocked nose and is finding it difficult to breathe. You find out that she has had the symptoms for a few days; they have gradually got worse. She gets hay fever every summer and it is usually controlled by *chlorphenamine* tablets, which she buys every year and which she is taking at the moment. As a child, she suffered quite badly from eczema and is still troubled by it occasionally. She tells you that she has been a little wheezy for the past day or so, but she does not have a cough, and has not coughed up any sputum. She is not taking any other medicines.

The pharmacist's view

This woman has a previous history of hay fever, which has, until now, been dealt adequately with *chlorphenamine* tablets. Her symptoms have worsened over a period of a few days and she is now wheezing. It seems unlikely that she has a chest infection, which could have been a possible cause of the symptoms. She should be referred to the doctor at once since her symptoms suggest more serious implications such as asthma.

The doctor's view

This woman should be referred to her doctor directly. She almost certainly has seasonal asthma. In addition to the hay fever treatment recommended by her pharmacist, it is likely that she would also benefit from a steroid inhaler such as *beclometasone*. Depending on the severity of her symptoms, she would probably be prescribed a beta-agonist, such as a *salbutamol inhaler*, as well. This consultation is a complex one for a doctor to manage in the usual 10 min available in view of the time required for: information-giving, explanation about the nature of the problem, the rationale for the treatments and the technique of using inhalers.

Respiratory symptoms for direct referral

Chest pain

Respiratory causes

A knife-like pain is characteristic of pleurisy. It is a localised pain which is aggravated by taking a breath or coughing. It is usually caused by a respiratory infection and may be associated with an underlying pneumonia. Less commonly it may be caused by a pulmonary embolus (a blood clot which has lodged in a pulmonary artery after separating from a clot elsewhere in the circulation).

A similar pain to that experienced with pleurisy may arise from straining the muscles between the ribs following coughing. It may also occur with cracked or fractured ribs following injury or violent coughing. Another less common cause of pain is due to a pneumothorax where a small leak develops in the lung causing its collapse.

The upper front part of the chest may be very sore in the early stages of acute viral infections that cause inflammation of the trachea (tracheitis). Viral flu-like infections can be associated with non-specific muscular pain (myalgia).

Non-respiratory causes

Heartburn

Heartburn occurs when the acid contents of the stomach leak backwards into the oesophagus (gullet). The pain is described as a burning sensation, which spreads upwards towards the throat. Occasionally it can be so severe as to mimic cardiac pain.

Cardiac pain

Cardiac pain typically presents as a tight, gripping, vicelike, dull pain that is felt centrally across the front of the chest. The pain may seem to move down one or both arms. Sometimes the pain spreads to the neck. When angina is present, the pain is brought on by exercise and relieved by rest. When a coronary event such as a heart attack (myocardial infarction (MI)) occurs the pain is similar but more severe and prolonged. It may come on at rest.

Anxiety

Anxiety is a commonly seen cause of chest pain in general practice. The pain probably arises as a result of hyperventilation. Diagnosis can be difficult as the hyperventilation may not be obvious.

Shortness of breath

Shortness of breath may be a symptom of a cardiac or respiratory disorder. Differential diagnosis can be difficult. It is usually a sign of a serious condition although it can be due to anxiety.

Respiratory causes

Asthma

Occasionally asthma may develop in later life, but it is most commonly seen in young children or young adults. The breathlessness is typically associated with a wheeze, although in mild cases the only symptom may be a recurrent nocturnal cough. Most asthmatics have normal breathing between attacks. The attacks are often precipitated by viral infections such as colds. Some are worsened in the hay fever season, others by animal fur or dust. The breathlessness is often worse at night.

Chronic bronchitis and emphysema

Chronic bronchitis and emphysema are usually caused by cigarette smoking and give rise to permanent breathlessness, especially on exertion, with a productive cough. The breathing worsens when an infective episode develops. At such times there is also an increase in coloured sputum production.

Cardiac causes

Heart failure

Heart failure may develop gradually or present acutely as an emergency (usually in the middle of the night). The former (congestive cardiac failure) may cause breathlessness on exertion. It is often associated with ankle swelling (oedema) and is most common in the elderly. The more sudden type is called acute left ventricular failure (LVF). The victim is woken by severe breathlessness and has to sit upright. There is often a cough present with clear frothy sputum.

Other causes

Hyperventilation syndrome

Hyperventilation syndrome occurs when the rate of breathing is too high for the bodily requirements. Paradoxically the subjective

experience is that of breathlessness. The sufferer complains of difficulty in taking in a deep breath. The experience is frightening but harmless. It may be associated with other symptoms such as tingling in the hands and feet, numbness around the mouth, dizziness and various muscular aches. It may be caused by anxiety.

Wheezing

Wheezing sounds may be heard in the throat region in URTIs and are of little consequence. They are to be differentiated from wheezing emanating from the lungs. In this latter situation there is usually some difficulty in breathing.

Wheezy bronchitis

Wheezing occurs in infants with wheezy bronchitis. It is caused by a viral infection and is completely different from chronic bronchitis seen in adults. The infection is self-limiting but requires accurate diagnosis. Children who have a history of recurrent wheezy bronchitis are more likely to develop asthma.

Asthma

Wheezing is a common feature of asthma and accompanies the shortness of breath. However, in very mild asthma it is not obvious and may present with just a cough. At the other extreme an asthma attack can be so severe that so little air moves in and out of the lungs there is no audible wheeze.

Cardiac

Wheezing may be a symptom associated with shortness of breath in heart failure.

Sputum

Sputum may be described as thick or thin and clear or coloured. It is a substance coughed up from the lungs and is not to be confused with saliva or nasal secretions.

Bronchitis

Clear thick sputum may be coughed up in chronic bronchitis or by regular cigarette smokers. It has a mucoid nature and may be described as white, grey or clear with black particles. Chronic bronchitics are prone to recurrent infective exacerbations during which sputum production increases and turns yellow or green.

Pneumonia

Coloured mucoid sputum may be present in other lung infections such as pneumonia. Rust-coloured sputum is characteristic of pneumococcal (lobar) pneumonia.

Cardiac

Clear thin (serous) sputum may be a feature of heart failure (LVF). The sputum forms as a result of pulmonary oedema, which characteristically awakens the patient in the night with shortness of breath.

Haemoptysis

The presence of blood in sputum is always alarming. It often results from a broken capillary caused by coughing and is harmless. However, it can be a symptom of serious disease such as lung cancer or pulmonary TB and should always be referred for further investigation. Occasionally blood is coughed up after a nosebleed and is of no consequence.

Gastrointestinal Tract Problems

Mouth ulcers

Mouth ulcers are extremely common, affecting as many as one in five of the population and they are a recurrent problem in some people. They are classified as aphthous (minor or major) or herpetiform ulcers. Most cases (more than three quarters) are minor aphthous ulcers, which are self-limiting. Ulcers may be due to a variety of causes including infection, trauma and drug allergy. However, occasionally mouth ulcers appear as a symptom of serious disease such as carcinoma. The pharmacist should be aware of the signs and characteristics that indicate more serious conditions.

What you need to know
Age
Child, adult
Nature of the ulcers
Size, appearance, location, number
Duration
Previous history
Other symptoms
Medication

Significance of questions and answers

Age

Patients may describe a history of recurrent ulceration, which began in childhood and has continued ever since. Minor aphthous ulcers are more common in women and occur most often between the ages of 10 and 40.

Nature of the ulcers

Minor aphthous ulcers usually occur in crops of one to five. The lesions may be up to 5 mm in diameter and appear as a white or yellowish centre with an inflamed red outer edge. Common sites are the tongue margin and inside the lips and cheeks. The ulcers tend to last from 5 to 14 days.

Other types of recurrent mouth ulcer include major aphthous and herpetiform. Major aphthous ulcers are uncommon, severe variants of the minor ones. The ulcers, which may be as large as 30 mm in diameter, can occur in crops of up to ten. Sites involved are the lips, cheeks, tongue, pharynx and palate. They are more common in sufferers of ulcerative colitis.

Herpetiform ulcers are more numerous, smaller and, in addition to the sites involved with aphthous ulcers, may affect the floor of the mouth and the gums. Table 1 summarises the features of the three main types of aphthous ulcers.

Systemic conditions such as Behçet's syndrome and erythema multiforme may produce mouth ulcers, but other symptoms would generally be present (see below).

Duration

Minor aphthous ulcers usually heal in less than 1 week; major aphthous ulcers take longer (10–30 days). Where herpetiform ulcers occur, fresh crops of ulcers tend to appear before the original crop has healed, which may lead patients to think that the ulceration is continuous.

Oral cancer

Any mouth ulcer that has persisted for longer than 3 weeks requires immediate referral to the dentist or doctor because an ulcer of such long duration may indicate serious pathology such as

Table 1 The three main types of apthous ulcers

Minor	Major	Herpetiform
80% of patients	10–12% of patients	8–10% of patients
2–10 mm in diameter (usually 5–6 mm)	Usually over 10 mm in diameter; may be smaller	0.5–3.0 mm in diameter
Usually 1–5 mm in diameter	Usually 10–20 mm in diameter or more	0.05–1.0 mm in diameter
Round or oval	Round or oval	Round or oval, coalesce to form irregular shape as they enlarge
Usually not very painful	Prolonged and painful ulceration. May present patient with great problems – eating may become difficult.	May be very painful

carcinoma. Most oral cancers are squamous cell carcinomas, of which one in three affects the lip and one in four affects the tongue. The development of a cancer may be preceded by a premalignant lesion, including erythroplasia (red) and leucoplakia (white), or a speckled leucoplakia. Squamous cell carcinoma may present as a single ulcer with a raised and indurated (firm or hardened) border. Common locations include the lateral border of the tongue, lips, floor of the mouth and gingiva. The key point to raise suspicion would be a lesion that had lasted for several weeks or longer. Oral cancer is more common in smokers than non-smokers.

Previous history

There is often a family history of mouth ulcers (estimated to be present in one in three cases). Minor aphthous ulcers often recur, with the same characteristic features of size, numbers, appearance and duration before healing. The appearance of these ulcers may follow trauma to the inside of the mouth or tongue, such as biting the inside of the cheek while chewing food. Episodes of ulceration generally recur after 1–4 months.

Ill-fitting dentures may produce ulceration and, if this is a suspected cause, the patient should be referred back to the dentist so that the dentures can be refitted. However, trauma is not always a feature of the history, and the cause of minor aphthous ulcers remains unclear despite extensive investigation.

In women, minor aphthous ulcers often precede the start of the menstrual period. The occurrence of ulcers may cease after pregnancy, suggesting hormonal involvement. Stress and emotional factors at work or home may precipitate a recurrence or a delay in healing but do not seem to be causative.

Deficiency of iron, folate, zinc or vitamin B_{12} may be a contributory factor in aphthous ulcers and may also lead to glossitis (a condition where the tongue becomes sore, red and smooth) and angular stomatitis (where the corners of the mouth become sore, cracked and red).

Food allergy is occasionally the causative factor and it is worth enquiring whether the appearance of ulcers is associated with particular foods.

Other symptoms

The severe pain associated with major aphthous or herpetiform ulcers may mean that the patient finds it difficult to eat and, as a consequence, weight loss may occur. Weight loss would therefore be an indication for referral.

In most cases of recurrent mouth ulcers the disease eventually burns itself out over a period of several years. Occasionally, as in Behçet's syndrome, there is progression with involvement of sites other than the mouth. Most commonly the vulva, vagina and the eyes are affected, with genital ulceration and iritis (see p. 265).

Behçet's syndrome can be confused with erythema multiforme, although in the latter there is usually a distinctive rash present on the skin. Erythema multiforme is sometimes precipitated by an infection or drugs (e.g. sulphonamides or barbiturates).

Mouth ulcers may be associated with inflammatory bowel disorders or with coeliac disease. Therefore, if persistent or recurrent diarrhoea is present, referral is essential. Patients reporting any of these symptoms should be referred to their doctor.

Rarely, ulcers may be associated with disorders of the blood including anaemia, abnormally low white cell count or leukaemia. It would be expected that in these situations there would be other signs of illness present and the sufferer would present directly to the doctor.

Medication

The pharmacist should establish the identity of any current medication, since mouth ulcers may be produced as a side-effect of drug therapy. Drugs that have been reported to cause the problem include *aspirin* and other NSAIDs, cytotoxic drugs and *sulfasalazine* (*sulphasalazine*). Radiotherapy may also induce mouth ulcers. It is worth asking about herbal medicines because *feverfew* (used for migraine) can cause mouth ulcers.

It would also be useful to ask the patient about any treatments tried either previously or on this occasion and the degree of relief obtained. The pharmacist can then recommend an alternative product where appropriate.

When to refer
Duration of longer than 3 weeks
Associated weight loss
Involvement of other mucous membranes
Rash
Suspected adverse drug reaction
Diarrhoea

Treatment timescale

If there is no improvement after 1 week, the patient should see the doctor.

Management

Symptomatic treatment of minor aphthous ulcers can be recommended by the pharmacist, and can relieve pain and reduce healing time. Active ingredients include antiseptics, corticosteroids and local anaesthetics. There is evidence from clinical trials to support use of topical corticosteroids and *chlorhexidine mouthwash*. Gels and liquids may be more accurately applied using a cotton bud or cotton wool, providing the ulcer is readily accessible. Mouthwashes can be useful where ulcers are difficult to reach.

Chlorhexidine gluconate mouthwash

There is some evidence that *chlorhexidine mouthwash* reduces duration and severity of ulceration. The rationale for the use of antibacterial agents in the treatment of mouth ulcers is that secondary bacterial infection frequently occurs. Such infection can increase discomfort and delay healing. *Chlorhexidine* helps to prevent secondary bacterial infection but it does not prevent recurrence. It has a bitter taste and is available in peppermint as well as standard flavour. Regular use can stain teeth brown – an effect that is not usually permanent. Advising the patient to brush the teeth before using the mouthwash can reduce staining. The mouth should then be well rinsed with water as *chlorhexidine* can be inactivated by some toothpaste ingredients. The mouthwash should be used twice a day, rinsing 10 ml in the mouth for 1 minute.

Topical corticosteroids

Hydrocortisone and *triamcinolone* act locally on the ulcer to reduce inflammation and pain, and to shorten healing time. The former is available as pellets, the latter in a protective paste. To exert its effect, a pellet must be held in close proximity to the ulcer until dissolved. This can be difficult when the ulcer is in an inaccessible spot. One pellet is used four times a day. The pharmacist should explain that the pellets should not be sucked, but dissolved in contact with the ulcer. These treatments are best used as early as possible. Before an ulcer appears, the affected area feels sensitive and tingling – the prodromal phase – and treatment should start then. They should be applied 3–4 times daily. They have no effect on recurrence but should be restarted at the first signs of a new outbreak.

Local analgesics

Benzydamine mouthwash or *spray* and *choline salicylate dental gel* are short-acting but can be useful in very painful major ulcers. The mouthwash is used by rinsing 15 ml in the mouth three times a day.

Numbness, tingling and stinging can occur with *benzydamine*. Diluting the mouthwash with the same amount of water before use can reduce stinging. The mouthwash is not licensed for use in children under 12. *Benzydamine spray* is used as four sprays onto the affected area three times a day. Although *aspirin* is no longer recommended for children under 16 years because of possible links with Reye's syndrome, *choline salicylate dental gel* produces low levels of salicylate and can therefore be used in children.

Carbenoxolone

Available as gel and mouthwash, *carbenoxolone* was shown in one small study to relieve pain and reduce healing time.

Local anaesthetics (e.g. lidocaine (lignocaine), benzocaine)

Local anaesthetic gels are often requested by patients. Although they are effective in producing temporary pain relief, maintenance of gels and liquids in contact with the ulcer surface is difficult. Reapplication of the preparation may be done when necessary. Tablets and pastilles can be kept in contact with the ulcer by the tongue and can be of value when just one or two ulcers are present. Any preparation containing a local anaesthetic becomes difficult to use when the lesions are located in inaccessible parts of the mouth.

Both *lidocaine* and *benzocaine* have been reported to produce sensitisation, but cross-sensitivity seems to be rare, probably because the two agents are from different chemical groupings. Thus, if a patient has experienced a reaction to one agent in the past, the alternative could be tried.

Mouth ulcers in practice

Case 1

Anthony Jarvis, a man in his early fifties, asks you to recommend something for painful mouth ulcers. On questioning, he tells you that he has two ulcers at the moment and has occasionally suffered from the problem over many years. Usually he gets one or two ulcers inside the cheek or lips and they last for about 1 week. Mr Jarvis is not taking any medicines and has no other symptoms. You ask to see the lesions and note that there are two small white patches, each with an angry-looking red border. One ulcer is located on the edge of the tongue, the

other inside the cheek. Mr Jarvis cannot remember any trauma or injury to the mouth and has had the ulcers for a couple of days. He tells you that he has used pain-killing gels in the past and they have provided some relief.

The pharmacist's view

From what he has told you, it would be reasonable to assume that Mr Jarvis suffers from recurrent minor aphthous ulcers. Treatment with *hydrocortisone* pellets (one pellet dissolved in contact with the ulcers four times a day), with *triamcinolone* in carmellose dental paste, or with a local anaesthetic or analgesic gel applied when needed, would help to relieve the discomfort until the ulcers healed. Mr Jarvis should see his doctor if the ulcers have not healed within 3 weeks.

The doctor's view

Mr Jarvis is most likely suffering from recurrent aphthous ulceration. As always, it is worthwhile enquiring about his general health, checking in particular that he does not have a recurrent bowel upset or weight loss. These ulcers can be helped by a topical steroid preparation.

Case 2

One of your counter assistants asks you to recommend a strong treatment for mouth ulcers for a woman who has already tried several treatments. The woman tells you that she has a troublesome ulcer that has persisted for a few weeks. She has used some pastilles containing a local anaesthetic and an antiseptic mouthwash but with no improvement.

The pharmacist's view

This woman should be advised to see her doctor for further investigation. The ulcer has been present for several weeks, with no sign of improvement, suggesting the possibility of a serious cause.

The doctor's view

Referral is correct. It is likely that the doctor will refer her to an oral surgeon for further assessment and probable biopsy as the ulcer could be malignant. Cancer of the mouth accounts for approximately 2% of all cancers of the body in Britain. It is most common after the sixth decade and is more common in men, especially pipe or cigar smokers. Cancer of the mouth is most often found on the tongue or lower lip. It may be painless initially.

Heartburn

Symptoms of heartburn are caused when there is reflux of gastric contents, particularly acid, into the oesophagus, which irritate the sensitive mucosal surface (oesophagitis). Patients will often describe the symptoms of heartburn; typically a burning discomfort/pain felt in the stomach passing upwards behind the breastbone (retrosternally). By careful questioning, the pharmacist can distinguish conditions that are potentially more serious.

What you need to know
Age
Adult, child
Symptoms
Heartburn
Difficulty in swallowing
Flatulence
Associated factors
Pregnancy
Precipitating factors
Relieving factors
Weight
Smoking habit
Eating
Medication
Medicines tried already
Other medicines being taken

Significance of questions and answers

Age

The symptoms of reflux and oesophagitis occur more commonly in patients aged over 55. Heartburn is not a condition normally experienced in childhood, although symptoms can occur in young adults and particularly in pregnant women. Children with symptoms of heartburn should therefore be referred to their doctor.

Symptoms/associated factors

A burning discomfort is experienced in the upper part of the stomach in the midline (epigastrium) and the burning feeling tends to move upwards behind the breastbone (retrosternally). The pain may be felt only in the lower retrosternal area or on occasion right up to the throat, causing an acid taste in the mouth.

Deciding whether or not someone is suffering from heartburn can be greatly helped by enquiring about precipitating or aggravating factors. Heartburn is often brought on by bending or lying down. It is more likely to occur in those who are overweight and can be aggravated by a recent increase in weight. It is also more likely to occur after a large meal. It can be aggravated and even caused by belching. Many people develop a nervous habit of swallowing to clear the throat. Each time this occurs, air is taken down into the stomach, which becomes distended. This causes discomfort which is relieved by belching but which in turn can be associated with acid reflux.

Severe pain

Sometimes the pain can come on suddenly and severely and even radiate to the back and arms. In this situation differentiation of symptoms is difficult as the pain can mimic a heart attack and urgent medical referral is essential. Sometimes patients who have been admitted to hospital apparently suffering a heart attack are found to have oesophagitis instead. For further discussion about causes of chest pain, see p. 59.

Difficulty in swallowing (dysphagia)

Difficulty in swallowing must always be regarded as a serious symptom. The difficulty may either be discomfort as food or drink is swallowed or a sensation of food or liquids sticking in the gullet. Both require referral (see 'When to refer' box below). It is possible that discomfort may be secondary to oesophagitis from acid reflux (gastro-oesophageal reflux disease (GORD)), especially when it occurs whilst swallowing hot drinks or irritant fluids (e.g. alcohol or fruit juice). A history of a sensation that food sticks as it is swallowed or that it does not seem to pass directly into the stomach (dysphagia) is an indication for immediate referral. It may be due to obstruction of the oesophagus, e.g. by a tumour.

Regurgitation

Regurgitation can be associated with difficulty in swallowing. It occurs when recently eaten food sticks in the oesophagus and is regurgitated without passing into the stomach. This is due to a

mechanical blockage in the oesophagus. This can be caused by a cancer or, more fortunately, by less serious conditions such as a peptic stricture. A peptic stricture is caused by long-standing acid reflux with oesophagitis. The continual inflammation of the oesophagus causes scarring. Scars contract and can therefore cause narrowing of the oesophagus. This can be treated by dilatation using a fibre-optic endoscope. However, medical examination and further investigations are necessary to determine the cause of regurgitation.

Pregnancy

It has been estimated that as many as half of all pregnant women suffer from heartburn. Pregnant women aged over 30 are more likely to suffer from the problem. The symptoms are caused by an increase in intra-abdominal pressure and incompetence of the lower oesophageal sphincter. It is thought that hormonal influences, particularly progesterone, are important in the lowering of sphincter pressure. Heartburn often begins in mid to late pregnancy, but may occur at any stage. The problem may sometimes be associated with stress.

Medication

The pharmacist should establish the identity of any medication that has been tried to treat the symptoms. Any other medication being taken by the patient should also be identified; some drugs can cause the symptoms of heartburn, e.g. anticholinergic agents such as *hyoscine* and drugs with anticholinergic actions such as tricyclic antidepressants and phenothiazines. Calcium channel blockers, nitrates (especially *nifedipine*), *theophylline* and *aminophylline* can also aggravate heartburn, as can caffeine in compound analgesics or when taken as a stimulant.

Failure to respond to antacids and pain radiating to the arms could mean that the pain is not caused by acid reflux. Although it is still a possibility, other causes such as ischaemic heart disease (IHD) and gall bladder disease have to be considered.

When to refer
Failure to respond to antacids
Pain radiating to arms
Difficulty in swallowing
Regurgitation
Long duration
Increasing severity
Children

Treatment timescale

If symptoms have not responded to treatment after 1 week the patient should see a doctor.

Management

The symptoms of heartburn respond well to treatments that are available OTC, and there is also a role for the pharmacist to offer practical advice about measures to prevent recurrence of the problem. Pharmacists will use their professional judgement to decide whether to offer antacids/alginates, H_2 antagonists or the proton pump inhibitor (PPI) *omeprazole* as first-line treatment. The decision will also take into account customer preference.

Antacids

Antacids can be effective in controlling the symptoms of heartburn and reflux, more so in combination with an alginate. Choice of antacid can be made by the pharmacist using the same guidelines as in the section on indigestion (see p. 86). Preparations that are high in sodium should be avoided by anyone on a sodium-restricted diet (e.g. those with congestive heart failure or kidney or liver problems).

Alginates

Alginates form a raft that sits on the surface of the stomach contents and prevents reflux. Some alginate-based products contain *sodium bicarbonate*, which, in addition to its antacid action, causes the release of carbon dioxide in the stomach, enabling the raft to float on top of the stomach contents. If a preparation low in sodium is required, the pharmacist can recommend one containing *potassium bicarbonate* instead. Alginate products with low sodium content are useful for the treatment of heartburn in patients on a restricted sodium diet.

H_2 antagonists (cimetidine, famotidine, ranitidine)

Cimetidine, *famotidine* and *ranitidine* have been deregulated from prescription-only control for the short-term treatment (up to 2 weeks) of dyspepsia, hyperacidity and heartburn (see also p. 88). The 2-week treatment limit is intended to ensure that patients do not continuously self-medicate for long periods. Pharmacists and their staff can ask whether use has been continuous or intermittent when a repeat purchase request is made. The H_2 antagonists have both a longer duration of action (up to 8–9 h) and a longer onset of action than antacids.

Where food is known to precipitate symptoms, the H_2 antagonist should be taken an hour before food. H_2 antagonists are also effective for prophylaxis of nocturnal heartburn. Headache, dizziness, diarrhoea and skin rashes have been reported as adverse effects but they are not common.

Manufacturers state that patients should not take OTC *cimetidine*, *famotidine* or *ranitidine* without checking with their doctor if they are taking other prescribed medicines.

Cimetidine

Cimetidine can be sold OTC at a maximum dose of 200 mg and a maximum daily dose of 800 mg. The drug binds to microsomal cytochrome P450 in the liver and inhibits the normal operation of the enzyme system, increasing the levels of some drugs. As a result, *cimetidine* has a number of significant interactions with other drugs, including *theophylline*, resulting in toxic levels of *theophylline*. Other important concurrent drugs to avoid are *warfarin* and *phenytoin*. The *BNF* appendix on drug interactions gives further information.

Famotidine

Famotidine does not affect the cytochrome P450 system and therefore does not cause the same range of interactions as *cimetidine*. The drug is licensed for OTC use at a maximum dose of 10 mg and a maximum daily dose of 20 mg. *Famotidine* is also available as a tablet in combination with the antacids magnesium hydroxide and calcium carbonate. The idea behind this is to provide rapid symptom relief from the antacid and longer action from *famotidine*.

Ranitidine

Ranitidine is licensed for OTC use in a dose of 75 mg with a maximum daily dose of 300 mg. *Ranitidine* does not affect the cytochrome P450 system.

Proton pump inhibitors

Omeprazole was recently deregulated to a P medicine for the relief of heartburn symptoms associated with reflux in adults. PPIs, including *omeprazole*, are generally accepted as being amongst the most effective medicines for the relief of heartburn. It may, however, take a day or so for them to start being fully effective. During this period a patient with ongoing symptoms may need to take a concomitant antacid. *Omeprazole* works by suppressing gastric acid secretion in the stomach. It inhibits the final stage of gastric hydrochloric acid production

by blocking the hydrogen-potassium ATPase enzyme in the parietal cells of the stomach wall (also known as the proton pump).

Two 10 mg tablets once daily is the initial starting dose. Subsequently, symptomatic relief from heartburn can be achieved in some subjects by taking 10 mg once daily, increasing to 20 mg if symptoms return. The lowest effective dose should always be used and the maximum daily dose is two tablets. Patients taking *omeprazole* should be advised not to take H_2 antagonists at the same time. The tablets should be swallowed whole with plenty of liquid prior to a meal. It is important that the tablets should not be crushed or chewed. Alcohol and food do not affect the absorption of *omeprazole*.

If no relief is obtained within 2 weeks, the patient should be referred to the doctor. *Omeprazole* should not be taken during pregnancy or whilst breastfeeding. Drowsiness has rarely been reported. Treatment with OTC *omeprazole* may cause a false negative result in the 'breath test' for *helicobacter*. Its drug interaction profile is identical to that of the POM, and the *BNF* provides detailed information.

Practical points

Obesity

If the patient is overweight, weight reduction should be advised. There is some evidence that weight loss reduces symptoms of heartburn.

Food

Small meals, eaten frequently, are better than large meals, as reducing the amount of food in the stomach reduces gastric distension, which helps to prevent reflux. Gastric emptying is slowed when there is a large volume of food in the stomach; this can also aggravate symptoms. High-fat meals delay gastric emptying. The evening meal is best taken several hours before going to bed.

Posture

Bending, stooping and even slumping in an armchair can provoke symptoms and should be avoided where possible. It is better to squat rather than bend down. Since the symptoms are often worse when the patient lies down, there is evidence that raising the head of the bed can reduce both acid clearance and the number of reflux episodes. Using extra pillows is often recommended but this is not as effective as raising the head of the bed. The reason for this is that using extra pillows raises only the upper part of the body, with bending at the waist, which can result in increased pressure on the stomach contents.

Clothing

Tight, constricting clothing, especially waistbands and belts, can be an aggravating factor and should be avoided.

Other aggravating factors

Smoking, alcohol, caffeine and chocolate have a direct effect by making the oesophageal sphincter less competent by reducing its pressure and therefore contribute to symptoms. The pharmacist is in a good position to offer advice about how to stop smoking, offering a smoking cessation product where appropriate (see 'Prevention of heart disease'). The knowledge that the discomfort of heartburn will be reduced can be a motivating factor in giving up cigarettes.

Heartburn in practice

Case 1

Mrs Amy Beston is a woman aged about 50 who wants some advice about a stomach problem. On questioning, you find out that sometimes she gets a burning sensation just above the breastbone and that she feels the burning in her throat, often with a bitter taste as if some food has been brought back up. The discomfort is worse when in bed at night and when bending over whilst gardening. She has been having the problem for 1 or 2 weeks and has not yet tried to treat it. Mrs Beston is not taking any medicines from the doctor. To your experienced eye this lady is at least a stone overweight. You ask Mrs Beston if the symptoms are worse at any particular time and she says they are worst shortly after going to bed at night.

The pharmacist's view

This woman has many of the classic symptoms of heartburn; pain in the retrosternal region and reflux. The problem is worse at night after going to bed, as is common in heartburn. Mrs Beston has been experiencing the symptoms for about 2 weeks and is not taking any medicines from the doctor.

It would be reasonable to advise the use of an alginate antacid product about 1 h after meals and before going to bed, or an H_2 antagonist. Practical advice could include the tactful suggestion that Mrs Beston's symptoms would be improved if she lost weight. Advice on healthy eating and contact with a local Weight Watchers group could be given. Mrs Beston could also try raising the head of the bed or using extra pillows at bedtime, wearing loose-fitting clothes, cutting down on tea, coffee and, if she smokes, on smoking. This is a long list of potential lifestyle changes. It might be a good idea to explain the

contributory factors to Mrs Beston and negotiate with her as to which one she will begin with. Success is more likely to be achieved and sustained if changes are introduced one at a time.

Menopausal women are more prone to heartburn, and weight gain at the time of the menopause will exacerbate the problem.

The doctor's view

The advice given by the pharmacist is sensible. Acid reflux is the most likely explanation for her symptoms. It is not clear from the presentation whether she was seeking medication or simply asking for an opinion about the cause of her symptoms, or both. It is always helpful to explore a patient's expectations in order to produce an effective outcome to a consultation. In this instance the interchange between the pharmacist and Mrs Beston is complex as a large amount of information needs to be given, both explaining the cause of the symptoms (providing an understandable description of oesophagus, stomach, acid reflux and oesophagitis) and advising about treatment and lifestyle. It is often sensible to offer a follow-up discussion to check on progress and reinforce advice. If her heartburn was not improving it would provide an opportunity to recommend referral to her doctor.

The doctor's next step would be very much dependent on this information. If a clear story of heartburn caused by acid reflux were obtained, then reinforcement of the pharmacist's advice concerning posture, weight, diet, smoking and alcohol would be appropriate. If medication was requested, antacids or alginates could be tried. If the symptoms were severe, an H_2 antagonist or *omeprazole* would be treatment options. In the case of persistent symptoms or diagnostic uncertainty, referral for endoscopy would be necessary. *Helicobacter pylori* eradication is not thought to play a role in the management of heartburn.

Case 2

You have been asked to recommend a strong mixture for heartburn for Harry Groves, a local man in his late fifties who works in a nearby warehouse. Mr Groves tell you that he has been getting terrible heartburn for which his doctor prescribed some mixture about 1 week ago. You remember dispensing a prescription for a liquid alginate preparation. The bottle is now empty and the problem is no better. When asked if he can point to where the pain is, Mr Groves gestures across his chest and clenches his fist when describing the pain, which he says feels heavy. You ask whether the pain ever moves and Mr Groves tells you that sometimes it goes to his neck and jaw. Mr Groves is a smoker and is not taking any other medicines. When asked

if the pain worsens when bending or lying down, Mr Groves says it does not, but he tells you he usually gets the pain when he is at work, especially on busy days.

The pharmacist's view

This man should see his doctor immediately. The symptoms he has described are not those that would be typical of heartburn. In addition, he has been taking an alginate preparation, which has been ineffective. Mr Groves' symptoms give cause for concern; the heartburn is associated with effort at work and its location and radiation suggest a more serious cause.

The doctor's view

Mr Groves' story is suggestive of angina. He should be advised to contact his doctor immediately. The doctor would require more details about the pain, such as duration and whether or not the pain can come on without any exertion. If the periods of pain were frequent, prolonged and unrelieved by rest it would be usual to arrange immediate hospital admission as the picture sounds like unstable or crescendo angina.

If an urgent inpatient referral is not required, the doctor would carry out a fuller assessment that would usually include an examination, electrocardiogram (ECG) , urine analysis and blood test. This in turn could lead to medication, e.g. *aspirin* or *glyceryl trinitrate* (GTN), possibly a long-acting nitrate (*isosorbide mononitrate*), perhaps a beta-blocker and/or calcium channel blocker being prescribed and an urgent outpatient referral to a cardiologist. Mr Groves would be strongly advised to stop smoking.

More detailed tests are likely to be arranged in hospital. These would probably include an exercise cardiogram and an angiogram.This latter test allows visualisation of the blood vessels supplying the heart muscle and assessment of whether surgery would be advisable.

Indigestion

Indigestion (dyspepsia) is commonly presented in community pharmacies and is often self-diagnosed by patients, who use the term to include anything from pain in the chest and upper abdomen to lower abdominal symptoms. Many patients use the terms indigestion and heartburn interchangeably. The pharmacist must establish whether such a self-diagnosis is correct and exclude the possibility of serious disease.

What you need to know
Symptoms
Age
Adult, child
Duration of symptoms
Previous history
Details of pain
Where is the pain?
What is its nature?
Is it associated with food?
Is the pain constant or colicky?
Are there any aggravating or relieving factors?
Does the pain move to anywhere else?
Associated symptoms
Loss of appetite
Weight loss
Nausea/vomiting
Alteration in bowel habit
Diet
Any recent change of diet?
Alcohol consumption
Smoking habit
Medication
Medicines already tried
Other medicines being taken

Significance of questions and answers

Symptoms

The symptoms of typical indigestion include poorly localised upper abdominal (the area between the belly button and the breastbone) discomfort which may be brought on by particular foods, excess food, alcohol or medication (e.g. *aspirin*).

Age

Indigestion is rare in children, who should be referred to the doctor. Abdominal pain, however, is a common symptom in children and is often associated with an infection. OTC treatment is not appropriate for abdominal pain of unknown cause and referral to the doctor would be advisable.

Be cautious when dealing with first-time indigestion in patients aged 45 or over and refer them to the GP for a diagnosis. Gastric cancer, while rare in young patients, is more likely to occur in those aged 50 and over. Careful history-taking is therefore of paramount importance here.

Duration/previous history

Indigestion that is persistent or recurrent should be referred to the doctor, after considering the information gained from questioning. Any patient with a previous history of the symptom which has not responded to treatment, or which has worsened, should be referred.

Details of pain/associated symptoms

If the pharmacist can obtain a good description of the pain, then the decision whether to advise treatment or referral is much easier. A few medical conditions that may present as indigestion but which require referral are described below.

Ulcer

Ulcers may occur in the stomach (gastric ulcer) or in the first part of the small intestine leading from the stomach (duodenal ulcer). Duodenal ulcers are more common and have different symptoms from gastric ulcers. Typically the pain of a duodenal ulcer is localised to the upper abdomen, slightly to the right of the midline. It is often possible to point to the site of pain with a single finger. The pain is dull and is most likely to occur when the stomach is empty, especially at night. It is relieved by food (although it may be aggravated by fatty foods) and antacids.

The pain of a gastric ulcer is in the same area but less well localised. It is often aggravated by food and may be associated with nausea and vomiting. Appetite is usually reduced and the symptoms are persistent and severe. Both types of ulcer are associated with *H. pylori* infection and may be exacerbated or precipitated by smoking and NSAIDs.

Gallstones

Single or multiple stones can form in the gall bladder, which is situated beneath the liver. The gall bladder stores bile. It periodically contracts to squirt bile through a narrow tube (bile duct) into the duodenum to aid the digestion of food, especially fat. Stones can become temporarily stuck in the opening to the bile duct as the gall bladder contracts. This causes severe pain (biliary colic) in the upper abdomen below the right rib margin. Sometimes this pain can be confused with that of a duodenal ulcer. Biliary colic may be precipitated by a fatty meal.

Gastro-oesophageal reflux

When a person eats, food passes down the gullet (oesophagus) into the stomach. Acid is produced by the stomach to aid digestion. The lining of the stomach is resistant to the irritant effects of acid, whereas the lining of the oesophagus is readily irritated by acid. A sphincter (valve) system operates between the stomach and the oesophagus preventing reflux of stomach contents.

When this valve system is weak, e.g. in the presence of a hiatus hernia, or where sphincter muscle tone is reduced by drugs such as anticholinergics, *theophylline* and calcium channel blockers, the acid contents of the stomach can leak backwards into the oesophagus. The symptoms arising are typically described as heartburn but many patients use the terms heartburn and indigestion interchangeably. Heartburn is a pain arising in the upper abdomen passing upwards behind the breastbone. It is often precipitated by a large meal, or by bending and lying down. Heartburn can be treated by the pharmacist but sometimes requires referral (see p. 74).

Irritable bowel syndrome (IBS)

IBS is a common, non-serious but troublesome condition in which symptoms are caused by colon spasm (also see p. 122). There is usually an alteration in bowel habit, often with alternating constipation and diarrhoea. The diarrhoea is typically worse first thing in the morning. Pain is usually present. It is often lower abdominal (below and to the right or left of the belly button) but it may be upper abdominal and therefore confused with indigestion. Any persistent alteration in normal bowel habit is an indication for referral.

Atypical angina

Angina is usually experienced as a tight, painful constricting band across the middle of the chest. Atypical angina pain may be felt in the lower chest or upper abdomen. It is likely to be precipitated by exercise or exertion. If this occurs, referral is necessary.

More serious disorders

Persisting upper abdominal pain, especially when associated with anorexia and unexplained weight loss, may herald an underlying cancer of the stomach or pancreas. Ulcers sometimes start bleeding, which may present with blood in the vomit (haematemesis) or in the stool (melaena). In the latter the stool becomes tarry and black. Urgent referral is necessary.

Diet

Fatty foods and alcohol can cause indigestion, aggravate ulcers and precipitate biliary colic.

Smoking habit

Smoking predisposes to, and may cause, indigestion and ulcers. Ulcers heal more slowly and relapse more often during treatment in smokers. The pharmacist is in a good position to offer advice on smoking cessation, perhaps with a recommendation to use NRT.

Medication

Medicines already tried

Anyone who has tried one or more appropriate treatments without improvement or whose initial improvement in symptoms is not maintained should see the doctor.

Other medicines being taken

GI side-effects can be caused by many drugs, so it is important for the pharmacist to ascertain any medication that the patient is taking.

NSAIDs have been implicated in the causation of ulcers and bleeding ulcers, and there are differences in toxicity related to increased doses and to the nature of individual drugs. Sometimes these drugs cause indigestion. Elderly patients are particularly prone to such problems and pharmacists should bear this in mind. Severe or prolonged indigestion in any patient taking an NSAID is an indication for referral. Particular care is needed in elderly patients, when referral is always advisable. A study looked at emergency admissions to

two hospitals in two areas of England for GI disease. When the results were extrapolated to the UK, the number of NSAID-associated emergency admissions in the UK per year would be about 12 000, with about 2500 deaths.

OTC medicines also require consideration; *aspirin*, *ibuprofen* and *iron* are among those that may produce symptoms of indigestion. Some drugs may interact with antacids; these include antibacterials (the absorption of most tetracyclines, e.g. *azithromycin*, *cefaclor*, *ciprofloxazin*, *itraconazole* and *ketoconazole*, may be reduced if taken at the same time as antacids) and *iron* preparations. Absorption of ACE inhibitors, *phenothiazines*, *sulpiride*, *gabapentin* and *phenytoin* may also be reduced. See the *BNF* for a full current list. Taking the doses of antacids and other drugs at least 1 h apart should minimise the interaction.

When to refer
Age over 45 if symptoms develop for first time
Symptoms are persistent (longer than 5 days) or recurrent
Pain is severe
Blood in vomit or stools
Pain worsens on effort
Persistent vomiting
Treatment has failed
Adverse drug reaction is suspected
Associated weight loss
Children

Treatment timescale

If symptoms have not improved within 5 days, the patient should see the doctor.

Management

Once the pharmacist has excluded serious disease, treatment of dyspepsia with antacids or an H_2 antagonist may be recommended and is likely to be effective. The preparation should be selected on the basis of the individual patient's symptoms. Smoking, alcohol and fatty meals can all aggravate symptoms, so the pharmacist can advise appropriately.

Antacids

In general, liquids are more effective antacids than are solids; they are easier to take, work quicker and have a greater neutralising capacity. Their small particle size allows a large surface area to be in contact with the gastric contents. Some patients find tablets more convenient and these should be well chewed before swallowing for the best effect. It might be appropriate for the patient to have both; the liquid could be taken before and after working hours while the tablets could be taken during the day for convenience. Antacids are best taken about 1 h after a meal because the rate of gastric emptying has then slowed and the antacid will therefore remain in the stomach for longer. Taken at this time, antacids may act for up to 3 h compared with only 30 min–1 h if taken before meals.

Sodium bicarbonate

Sodium bicarbonate is the only absorbable antacid that is useful in practice. It is water-soluble, acts quickly, is an effective neutraliser of acid and has a short duration of action. It is often included in OTC formulations in order to give a fast-acting effect, in combination with longer-acting agents. However, antacids containing *sodium bicarbonate* should be avoided in patients if sodium intake should be restricted (e.g. in patients with congestive heart failure). *Sodium bicarbonate* increases excretion of lithium leading to reduced plasma levels. The contents of OTC products should therefore be carefully scrutinised and pharmacists should be aware of the constituents of some of the traditional formulary preparations. For example, *magnesium trisilicate* mixture contains *sodium bicarbonate* and is therefore relatively high in sodium. The relative sodium contents of different antacids can be found in the *BNF*. In addition, long-term use of *sodium bicarbonate* may lead to systemic alkalosis and renal damage. In short-term use, however, it can be a valuable and effective antacid. Its use is more appropriate in acute rather than chronic dyspepsia.

Aluminium and magnesium salts (e.g. aluminium hydroxide, magnesium trisilicate)

Aluminium-based antacids are effective; they tend to be constipating and this can be a useful effect in patients if there is slight diarrhoea. Conversely, the use of aluminium antacids is best avoided in anyone who is constipated and in elderly patients, who have a tendency to be so. Magnesium salts are more potent acid neutralisers than aluminium. They tend to cause osmotic diarrhoea as a result of the formation of insoluble magnesium salts and are therefore useful in patients who are slightly constipated. Combination products containing aluminium

and magnesium salts cause minimum bowel disturbance and are therefore valuable preparations for recommendation by the pharmacist.

Calcium carbonate

Calcium carbonate is commonly included in OTC formulations. It acts quickly, has a prolonged action and is a potent neutraliser of acid. It can cause acid rebound and, if taken over long periods at high doses, can cause hypercalcaemia and so should not be recommended for long-term use. *Calcium carbonate* and *sodium bicarbonate* can, if taken in large quantities with a high intake of milk, result in the milk–alkali syndrome. This involves hypercalcaemia, metabolic alkalosis and renal insufficiency; its symptoms are nausea, vomiting, anorexia, headache and mental confusion.

Dimeticone (dimethicone)

Dimeticone is sometimes added to antacid formulations for its defoaming properties. Theoretically, it reduces surface tension and allows easier elimination of gas from the gut by passing flatus or eructation (belching). Evidence of benefit is uncertain.

Interactions with antacids

Because they raise the gastric pH, antacids can interfere with enteric coatings on tablets that are intended to release their contents further along the GI tract. The consequences of this may be that release of the drug is unpredictable; adverse effects may occur if the drug is in contact with the stomach. Alternatively, enteric coatings are sometimes used to protect a drug that may be inactivated by the low pH in the stomach; so concurrent administration of antacids may result in such inactivation.

Sucralfate works best in an acid medium; so concurrent administration with antacids should be avoided. Excretion of *quinidine* may be reduced and plasma levels increased if the urine is alkaline and antacids may increase urinary pH.

Antacids may reduce the absorption of tetracyclines, *azithromycin*, *itraconazole*, *ketoconazole*, *penicillamine*, *chlorpromazine*, *diflunisal*, *dipyridamole*, *ciprofloxacin*, *norfloxacin*, *ofloxacin*, *rifampicin* and *zalcitabine*. *Sodium bicarbonate* may increase the excretion of lithium and lower the plasma level, so that a reduction in lithium's therapeutic effect may occur. Antacids containing *sodium bicarbonate* should not therefore be recommended for any patient on lithium therapy.

The changes in pH that occur after antacid administration can result in a decrease in iron absorption if iron is taken at the same

time. The effect is caused by the formation of insoluble iron salts due to the changed pH. Taking iron and antacids at different times should prevent the problem. See *BNF* for a detailed listing of interactions with antacids.

Cimetidine, famotidine and ranitidine

Cimetidine, *famotidine* and *ranitidine* have been deregulated from prescription-only status for the short-term treatment of dyspepsia and heartburn (see also p. 75). *Cimetidine* affects the cytochrome P450 enzyme system in the liver and therefore produces a range of drug interactions (see p. 76); *famotidine* and *ranitidine* do not affect the cytochrome P450 system. Treatment with these drugs is limited to a maximum of 2 weeks.

Discussing the use of H_2 antagonists with local family doctors would be valuable. Perhaps agreeing general guidelines or a protocol for their use could be a feature of the discussion.

Domperidone

Domperidone 10 mg can be used for the treatment of postprandial stomach symptoms of excessive fullness, nausea, epigastric bloating and belching, occasionally accompanied by epigastric discomfort and heartburn. It increases the rate of gastric emptying and transit time in the small intestine, and also increases the strength of contraction of the oesophageal sphincter. *Domperidone* can be used in patients aged 16 and over. The maximum dose is 10 mg and the maximum daily dose 40 mg. When used as a POM medicine, *domperidone* is used to treat nausea and vomiting, but these indications are not included in the P licence and patients with these symptoms would need to be referred.

Indigestion in practice

Case 1

Mrs Johnson, an elderly woman, complains of indigestion and an upset stomach. On questioning, you find out she has had the problem for a few days; the pain is epigastric and does not seem to be related to food. She has been feeling slightly nauseated. You ask about her diet; she has not changed her diet recently and has not been overdoing it. She tells you that she is taking four lots of tablets; for her heart, her waterworks and some new ones for her bad hip (*diclofenac* modified release 100 mg at night). She has been taking them after meals, as advised and has not tried any medicines yet to treat her symptoms. Before the *diclofenac* she was taking *paracetamol* for the pain. She

normally uses *paracetamol* as a general painkiller at home; she tells you that she cannot take *aspirin* because it upsets her stomach.

The pharmacist's view

It sounds as though this woman is suffering GI symptoms as a result of her NSAID. Such effects are more common in elderly patients. She has been taking the medicine after food, which should have minimised any GI effects, and the best course of action would be to refer her back to the doctor. It would be worth reminding Mrs Johnson always to check before using home painkillers in addition to those prescribed by the doctor in future. She might otherwise inadvertently duplicate *paracetamol* doses.

The doctor's view

Referral back to her doctor is the correct course of action. Almost certainly her symptoms have been caused by the *diclofenac*. A large clinical trial showed that risk factors for serious complications with oral NSAIDs were age 75 or more, history of peptic ulcer, history of GI bleeding and history of heart disease. If this woman were over 75 and taking tablets for heart problems, she has two significant risk factors. The model predicts that for patients with none of the four risk factors, 1-year risk of a complication is 0.8%. For patients with all four risk factors, the risk is 18%.

She should be advised to stop the *diclofenac*. A blood test for *H. pylori* would be helpful and whilst awaiting the results she could be started on a PPI such as *lansoprazole*. If the *H. pylori* test came back positive she would also benefit from *H. pylori* eradication therapy.

Control of her primary symptom (hip pain) will then be a problem. NSAIDs should be avoided if possible. It may be possible to change the *paracetamol* to a compound preparation containing *paracetamol* and *codeine* or *dihydrocodeine*. Alternatively the GP may consider a cyclooxygenase (COX) 2 selective inhibitor such as *rofecoxib*, which is less likely to cause GI side-effects.

If an NSAID is necessary to control the pain and there is a documented history of peptic ulceration, an NSAID can be given with a PPI. The NSAID can also be given concomitantly with *misoprostol*. *Misoprostol* is a prostaglandin analogue that protects the gastric mucosa and may limit damage from NSAIDs. Research evidence shows that *omeprazole* was more effective than *misoprostol* in preventing unwanted effects.

Failure to control hip pain due to osteoarthritis (OA) may require referral to an orthopaedic surgeon to consider a hip replacement.

Case 2

Ken Jones is a local milkman in his early fifties and he comes in to ask your advice about his stomach trouble. He tells you that he has been having the problem for a couple of months but it seems to have got worse. The pain is in his stomach, quite high up; he had similar pain a few months ago, but it got better and has now come back again. The pain seems to get better after a meal; sometimes it wakes him during the night. He has been taking Rennies to treat his symptoms; they did the trick, but do not seem to be working now, even though he takes a lot of them. He has also been taking some OTC *ranitidine* tablets. He is not taking any other medicines.

The pharmacist's view

Mr Jones has a history of epigastric pain, which remitted and has now returned. At one stage his symptoms responded to an antacid but they no longer do so, despite his increasing the dose. This long history, the worsening symptoms and the failure of medication warrants referral to the doctor.

The doctor's view

It would be sensible to recommend referral to his doctor as the information obtained so far does not permit diagnosis. It is possible that Mr Jones has a stomach ulcer, acid reflux or even a stomach cancer, but further information is required. An appropriate examination and investigation will be necessary.

The doctor would need to listen carefully, first by asking open questions and then by asking more direct, closed questions to find out more information, e.g.: How does the pain affect him? What is the nature of the pain (burning, sharp, dull, tight, constricting)? Does it radiate (to back or chest, down arms, up to neck/mouth)? Are there any associated symptoms (nausea, difficulty in swallowing, loss of appetite, weight loss, shortness of breath? Are there any other problems (constipation, flatulence)? What are the aggravating/relieving factors? How is his general health? What is his diet like? How are things going for him generally (personally/professionally)? Does he smoke? How much alcohol does he drink? What does he think might be wrong with him? What are his expectations for treatment/management?

Further investigation may be necessary to clarify the diagnosis. This could be achieved by a blood test (full blood count, renal and liver function, ESR, *H. pylori* serology), an endoscopy or a barium swallow/meal. The former is the more accurate method and allows for a biopsy to be taken. A biopsy is helpful in determining whether an ulcer

is benign or malignant and for identification of the presence of *H. Pylori*, which can cause peptic ulcers. This bacterium is present in nearly all cases of duodenal ulceration and over 80% of those with gastric ulceration. Treatment to eradicate *H. pylori* is very successful in healing ulcers and reducing the chances of future ulcer recurrence. This is particularly significant as the natural history of peptic ulcers is one of repeated relapse. *H. pylori* eradication may also be of benefit in non-ulcer dyspepsia. The most effective treatment to eradicate *H. pylori* is set out in the *BNF*.

Nausea and vomiting

Nausea and vomiting are symptoms that have many possible causes. From the pharmacist's point of view, while there are treatments available to prevent nausea and vomiting, there is no effective OTC treatment once vomiting is established. For that reason, this section will deal briefly with some of the causes of these symptoms and then continue in the next section to consider the prevention of motion sickness, where the pharmacist can recommend effective treatments to help prevent the problem.

What you need to know
Age
Infant, child, adult, elderly
Pregnancy
Duration
Associated symptoms
Has vomiting started?
Abdominal pain
Diarrhoea
Constipation
Fever
Alcohol intake
Medication
Prescribed
OTC
Previous history
Dizziness/vertigo

Significance of questions and answers

Age

The very young and the elderly are most at risk from dehydration as a result of vomiting. Vomiting of milk in infants less than 1 year old may be due to infection or feeding problems or, rarely, an obstruction such as pyloric stenosis. In the latter there is thickening of the muscular wall around the outlet of the stomach, which causes a blockage. It

typically occurs in the first few weeks of life in a first-born male. The vomiting is frequently projectile in that the vomit is forcibly expelled a considerable distance. The condition can be cured by a simple operation. The pharmacist must distinguish, by questioning, between vomiting (the forced expulsion of gastric contents through the mouth) and regurgitation (where food is effortlessly brought up from the throat and stomach). Regurgitation sometimes occurs in babies, where it is known as posseting and is a normal occurrence. When regurgitation occurs in adults, it is associated with oesophageal disease with difficulty in swallowing and requires referral (see p. 73). Nausea is associated with vomiting but not regurgitation and this can be employed as a distinguishing feature during questioning.

Pregnancy

Nausea and vomiting are very common in pregnancy, usually beginning after the first missed period and occurring early in the morning. Pregnancy should be considered as a possible cause of nausea and vomiting in any woman of childbearing age who presents at the pharmacy complaining of nausea and vomiting. Nausea and vomiting are more common in the first pregnancy than in subsequent ones.

Duration

Generally, adults should be referred to the doctor if vomiting has been present for longer than 2 days. Children under 2 years are referred whatever the duration because of the risks from dehydration. Anyone presenting with chronic vomiting should be referred to the doctor since such symptoms may indicate the presence of a peptic ulcer or gastric carcinoma.

Associated symptoms

An acute infection (gastroenteritis) is often responsible for vomiting and, in these cases, diarrhoea (see p. 110) may also be present. Careful questioning about food intake during the previous 2 days may give a clue as to the cause. In young children, the rotavirus is the most common cause of gastroenteritis; this is highly infectious and so it is not unusual for more than one child in the family to be affected. In such situations there are usually associated cold symptoms.

The vomiting of blood may indicate serious disease and is an indication for referral, since it may be caused by haemorrhage from a peptic ulcer or gastric carcinoma. Sometimes the trauma of vomiting can cause a small bleed, due to a tear in the gut lining. Vomit with a faecal smell means that the GI tract may be obstructed and requires urgent referral.

Nausea and vomiting may be associated with a migraine (see p. 197). Any history of dizziness or vertigo should be noted as it may point to inner ear disease, e.g. labyrinthitis or Meniere's disease as a cause of the nausea.

Alcohol intake

People who drink large quantities of alcohol may vomit, often in the morning. This may be due to occasional binge drinking or to chronic ingestion of alcohol. Alcoholic patients often feel nauseous and retch in the mornings. The questioning of patients about their intake of alcohol is a sensitive area and should be approached with tact. Asking about smoking habits might be a good way of introducing other social habits.

Medication

Prescribed and OTC medicines may make patients feel sick and it is therefore important to determine which medicines the patient is currently taking. *Aspirin* and NSAIDs are common causes. Some antibiotics may cause nausea and vomiting, e.g. *doxycyline*. Oestrogens, steroids and narcotic analgesics may also produce these symptoms. Symptoms can sometimes be improved by taking the medication with food, but if they continue, the patient should see the doctor. *Digoxin* toxicity may show itself by producing nausea and vomiting, and such symptoms in a patient who is taking *digoxin*, especially an elderly person, should prompt immediate referral where questioning has not produced an apparent cause for the symptoms. Vomiting, with loss of fluids and possible electrolyte imbalances, may cause problems in elderly people taking *digoxin* and diuretics.

Previous history

Any history that suggests chronic nausea and vomiting would indicate referral.

Management

Patients who are vomiting should be referred to the doctor, who will be able to prescribe an antiemetic if needed. The pharmacist can initiate rehydration therapy in the meantime.

Motion sickness and its prevention

Motion sickness is thought to be caused by a conflict of messages to the brain, where the vomiting centre receives information from the eyes, the GI tract and the vestibular system in the ear. Symptoms of motion sickness include nausea and sometimes vomiting, pallor and cold sweats. Parents commonly seek advice about how to prevent motion sickness in children, in whom the problem is most common. Any form of travel can produce symptoms, including air, sea and road. Effective prophylactic treatments are available OTC and can be selected to match the patient's needs.

What you need to know
Age
Infant, child, adult
Previous history
Mode of travel: car, bus, air, ferry, etc.
Length of journey
Medication

Significance of questions and answers

Age

Motion sickness is common in young children. Babies and very young children up to 2 years of age seem to only rarely suffer from the problem and therefore do not usually require treatment. The incidence of motion sickness seems to greatly reduce with age, although some adults still experience symptoms. The minimum age at which products designed to prevent motion sickness can be given varies, so for a family with several children careful product selection can provide one medicine to treat all cases.

Previous history

The pharmacist should ascertain which members of the family have previously experienced motion sickness and for whom treatment will be needed.

Mode of travel/length of journey

Details of the journey to be undertaken are useful. The estimated length of time to be spent travelling will help the pharmacist in the selection of prophylactic treatment, since the length of action of available drugs varies.

Once vomiting starts there is little that can be done, so any medicine recommended by the pharmacist must be taken in good time before the journey if it is to be effective. The fact that it is important that the symptoms are prevented before they can gain a hold should be emphasised to the parents. If it is a long journey, it may be necessary to repeat the dose while travelling and the recommended dosage interval should be stressed.

The pharmacist can also offer useful general advice about reducing motion sickness according to the method of transport to be used. For example, children are less likely to feel or be sick if they can see out of the car, so appropriate seats can be used to elevate the seating position of small children. This seems to be effective in practice and is thought to be because it allows the child to see relatively still objects outside the car. This ability to focus on such objects may help to settle the brain's receipt of conflicting messages.

For any method of travel, children are less likely to experience symptoms if they are kept occupied by playing games as they are therefore concentrating on something else. However, again, it seems that looking outside at still objects remains helpful and that a simple game, e.g. 'I Spy', is better than reading in this respect. In fact, for many travel sickness sufferers, reading exacerbates the feeling of nausea.

Medication

In addition to checking any prescription or OTC medicines currently being taken, the pharmacist should also enquire about any treatments used in the past for motion sickness and their level of success or failure.

Management

Prophylactic treatments for motion sickness, which can be bought OTC, are effective and there is usually no need to refer patients to the doctor.

Anticholinergic activity is thought to prevent motion sickness and forms the basis of treatment by anticholinergic agents (e.g. *hyoscine*) and antihistamines, which have anticholinergic actions (e.g. *cinnarizine*, *promethazine*).

Antihistamines

Antihistamines include *cinnarizine*, *meclozine* and *promethazine*. Anticholinergic effects are thought to be responsible for the effectiveness of antihistamines in the prophylaxis of motion sickness. All have the potential to cause drowsiness and *promethazine* appears to be the most sedative. *Meclozine* and *promethazine theoclate* have long durations of action and are useful for long journeys since they only need to be taken once daily. *Cinnarizine* and *promethazine theoclate* are not recommended for children younger than 5 years, whereas *meclozine* can be given to those over 2 years. The manufacturers of products containing these drugs advise that they are best avoided during pregnancy.

Anticholinergic agents

The only anticholinergic used widely in the prevention of motion sickness is *hyoscine hydrobromide*, which can be given to children over 3 years. Anticholinergic drugs can cause drowsiness, blurred vision, dry mouth, constipation and urinary retention as side-effects, although they are probably unlikely to do so at the doses used in OTC formulations for motion sickness. Children could be given sweets to suck to counteract any drying of the mouth.

Hyoscine has a short duration of action (from 1 to 3 h). It is therefore suitable for shorter journeys and should be given 20 min before the start of the journey. Anticholinergic drugs and antihistamines with anticholinergic effects are best avoided in patients with prostatic hypertrophy because of the possibility of urinary retention and in glaucoma because the intraocular pressure might be increased.

Pharmacists should remember that side-effects from anticholinergic agents are additive and may be increased in patients already taking drugs with anticholinergic effects, such as *amantidine*, tricyclic antidepressants (e.g. *amitriptyline*), butyrophenones (e.g. *haloperidol*) and phenothiazines (e.g. *chlorpromazine*). It is therefore important for the pharmacist to determine the identity of any medicines currently being taken by the patient. Table 2 summarises recommended doses and length of action for the treatments discussed.

Alternative approaches to motion sickness

Ginger

Some years ago it was found that ginger powder (*Zingiber officinale*) could effectively reduce motion sickness. No mechanism of action has been identified but it has been suggested that ginger acts on the GI tract itself rather than on the vomiting centre in the brain or on the vestibular system. No official dosage level has been suggested but

Table 2 Treatments for motion sickness

Ingredient	Minimum age for use (year)	Children's dose	Adult dose	Timing of first dose in relation to journey	Recommended dose interval (h)
Cinnarizine	5	15 mg	30 mg	2 h before	8
Hyoscine hydrobromide	3	3–4 years: 75 μg 4–7 years: 150 μg 7–12 years: 150–300 μg	300 μg	20 min before	6
Meclozine	2	2–12 years: 12.5 mg	25 mg	Previous evening or 1 h before	24
Promethazine theoclate	5	5–10 years: 12.5 mg Over 10 years: 25 mg	25 mg	Previous evening or 1 h before	24

several proprietary products containing ginger are available. Ginger would be worth trying for a driver who suffered from motion sickness, since it does not cause drowsiness, and might be worth considering for use in pregnant women, for whom other antiemetics such as anticholinergics and antihistamines are not recommended. Ginger has been shown to be effective in a research trial in nausea and vomiting associated with pregnancy (see 'Women's Health').

Acupressure wristbands

Following their apparently successful use on board naval ships to reduce motion sickness, elasticated wristbands that apply pressure to a defined point on the inside of the wrists are now readily available. As yet there is no consistent evidence from clinical trials of the effectiveness of this method but research is continuing. Such wristbands might be worth trying for drivers or pregnant women.

Constipation

Constipation is a condition that is difficult to define and is often self-diagnosed by patients. Generally it is characterised by the passage of hard, dry stools less frequently than the person's normal pattern. It is important for the pharmacist to find out what the patient means by constipation, and to establish what (if any) change in bowel habit has occurred and over what period of time.

What you need to know
Details of bowel habit
Frequency and nature of bowel actions now
When was the last bowel movement?
What is the usual bowel habit?
When did the problem start?
Is there a previous history?
Associated symptoms
Abdominal pain/discomfort/bloating/distension
Nausea and vomiting
Blood in the stool
Diet
Any recent change in diet?
Is the usual diet rich in fibre?
Medication
Present medication
Any recent change in medication
Previous use of laxatives

Significance of questions and answers

Details of bowel habit

Many people believe that a daily bowel movement is necessary for good health and laxatives are often taken and abused as a result. In fact, the normal range may vary from three movements in 1 day to three in 1 week. Therefore an important health education role for the pharmacist is in reassuring patients that their frequency of bowel movement is normal. Patients who are constipated will usually com-

plain of hard stools which are difficult to pass and less frequent than usual.

The determination of any change in bowel habit is essential, particularly any prolonged change. A sudden change, which has lasted for 2 weeks or longer, would be an indication for referral.

Associated symptoms

Constipation is often associated with abdominal discomfort, bloating and nausea. In some cases constipation can be so severe as to obstruct the bowel. This obstruction or blockage usually becomes evident by causing colicky abdominal pain, abdominal distension and vomiting. When symptoms suggestive of obstruction are present, urgent referral is necessary as hospital admission is the usual course of action. Constipation is only one of many possible causes of obstruction. Other causes such as bowel tumours or twisted bowels (volvulus) require urgent surgical intervention.

Blood in the stool

The presence of blood in the stool can be associated with constipation and although alarming, is not necessarily serious. In such situations blood may arise from piles (haemorrhoids) or a small crack in the skin on the edge of the anus (anal fissure). Both these conditions are thought to be caused by a diet low in fibre that tends to produce constipation. The bleeding is characteristically noted on toilet paper after defecation. The bright red blood may be present on the surface of the motion (not mixed in with the stool) and splashed around the toilet pan. If piles are present, there is often discomfort on defecation. The piles may drop down (prolapse) and protrude through the anus. A fissure tends to cause less bleeding but much more severe pain on defecation. Medical referral is advisable as there are other more serious causes of bloody stools, especially where the blood is mixed in with the motion.

Bowel cancer

Large bowel cancer may also present with a persisting change in bowel habit. This condition kills about 20 000 people each year in the UK. Early diagnosis and intervention can dramatically improve the prognosis. The incidence of large bowel cancer rises significantly with age. It is uncommon among people under 50 years. It is more common amongst those living in northern Europe and North America compared with southern Europe and Asia. The average age at diagnosis is 60–65 years.

Diet

Insufficient dietary fibre is a common cause of constipation. An impression of the fibre content of the diet can be gained by asking what would normally be eaten during a day, looking particularly for the presence of wholemeal cereals, bread, fresh fruit and vegetables. Changes in diet and lifestyle, e.g. following a job change, loss of work, retirement or travel, may result in constipation. An inadequate intake of food and fluids, e.g. in someone who has been ill, may be responsible.

Medication

One or more laxatives may have already been taken in an attempt to treat the symptoms. Failure of such medication may indicate that referral to the doctor is the best option. Previous history of the use of laxatives is relevant. Continuous use, especially of stimulant laxatives, can result in a vicious circle where the contents of the gut are expelled, causing a subsequent cessation of bowel actions for 1 or 2 days. This then leads to the false conclusion that constipation has recurred and more laxatives are taken, and so on.

Chronic overuse of stimulant laxatives can result in loss of muscular activity in the bowel wall (an atonic colon) and thus further constipation.

Many drugs can induce constipation; some examples are listed in Table 3. The details of prescribed and OTC medications being taken should be established.

When to refer
Change in bowel habit of 2 weeks or longer
Presence of abdominal pain, vomiting, bloating
Blood in stools
Prescribed medication suspected of causing symptoms
Failure of OTC medication

Treatment timescale

If 1 week's use of treatment does not produce relief of symptoms, the patient should see the doctor. If the pharmacist feels that it is only necessary to give dietary advice, then it would be reasonable to leave it for about 2 weeks to see if the symptoms settle.

Table 3 Drugs that may cause constipation

Drug group	Drug
Analgesics and opiates	*Dihydrocodeine, codeine*
Antacids	*Aluminium salts*
Anticholinergics	*Hyoscine*
Anticonvulsants	*Phenytoin*
Antidepressants	*Tricyclics, SSRIs*
Antihistamines	*Chlorpheniramine, promethazine*
Antihypertensives	*Clonidine, methyldopa*
Anti-Parkinson agents	*Levodopa*
Beta-blockers	*Propranolol*
Diuretics	*Bendrofluazide*
Irono	
Laxative abuse	
Monoamine oxidase inhibitors	
Antipsychotics	*Chlorpromazine*

Management

Constipation that is not caused by serious pathology will usually respond to simple measures, which can be recommended by the pharmacist: increasing the amount of dietary fibre; maintaining fluid consumption; and taking regular exercise. In the short term, a laxative may be recommended to ease the immediate problem.

Stimulant laxatives (e.g. senna, bisacodyl)

Stimulant laxatives work by increasing peristalsis. All stimulant laxatives can produce griping/cramping pains. It is advisable to start at the lower end of the recommended dosage range, increasing the dose if needed. The intensity of the laxative effect is related to the dose taken. Stimulant laxatives work within 6–12 h when taken orally. They should be used for a maximum of 1 week. *Bisacodyl* tablets are enteric-coated and should be swallowed whole because *bisacodyl* is irritant to the stomach. If it is given as a suppository, the effect usually occurs within 1 hour and sometimes as soon as 15 min after insertion.

Docusate sodium appears to have both stimulant and stool-softening effects and acts within 12 days.

The use of *senna* pods and *cascara*, which is non-standardised, should be discouraged because the dose, and therefore action, are unpredictable. Castor oil is a traditional remedy for constipation, which is no longer recommended since there are better preparations available.

Bulk laxatives (e.g. ispaghula, methylcellulose, sterculia)

Bulk laxatives are those that most closely copy the normal physiological mechanisms involved in bowel evacuation and are considered by many to be the laxatives of choice. Such agents are especially useful where patients cannot or will not increase their intake of dietary fibre. Bulk laxatives work by swelling in the gut and increasing faecal mass so that peristalsis is stimulated. The laxative effect can take several days to develop.

The sodium content of bulk laxatives (as *sodium bicarbonate*) should be considered in those requiring a restricted sodium intake.

When recommending the use of a bulk laxative, the pharmacist should advise that an increase in fluid intake would be necessary. In the form of granules or powder, the preparation should be mixed with a full glass of liquid (e.g. fruit juice or water) before taking. Fruit juice can mask the bland taste of the preparation. Intestinal obstruction may result from inadequate fluid intake in patients taking bulk laxatives, particularly those whose gut is not functioning properly as a result of abuse of stimulant laxatives.

Osmotic laxatives (e.g. lactulose, Epsom salts, Glauber's salts)

Lactulose works by maintaining the volume of fluid in the bowel. It may take 1–2 days to work. *Lactitol* is chemically related to *lactulose* and is available as sachets. The contents of the sachet are sprinkled on food or taken with liquid. One or two glasses of fluid should be taken with the daily dose. *Lactulose* and *lactitol* can cause flatulence, cramps and abdominal discomfort.

Epsom salts (*magnesium sulphate*) is a traditional remedy that, while no longer recommended, is still requested by some older customers. It acts by drawing water into the gut; the increased pressure results in increased intestinal motility. A dose usually produces a bowel movement within a few hours. Repeated use can lead to dehydration.

Glycerin suppositories have both osmotic and irritant effects and usually act within 1 h. They may cause rectal discomfort. Moistening the suppository before use will make insertion easier.

Lubricant laxatives (e.g. liquid paraffin)

Liquid paraffin works by coating and softening the faeces; it prevents further absorption of water in the colon. Long-term use can result in impaired absorption of fat-soluble vitamins (A, D, E, K). Leakage of *liquid paraffin* through the anal sphincter may occur, causing embarrassment and unpleasantness. If *liquid paraffin* is inadvertently inhaled into the lungs, lipid pneumonia can develop. Inhalation could

occur during vomiting or if acid reflux (regurgitation) is present. The unpleasant and dangerous effects of *liquid paraffin* have led to restrictions in the UK on the pack size that can be sold. Pharmacists have an important role in discouraging the use of *liquid paraffin*, which has little valid therapeutic use.

Constipation in children

Parents sometimes ask for laxatives for their children. Fixed ideas about regular bowel habits are often responsible for such requests. Numerous factors can cause constipation in children, including a change in diet and emotional causes. Simple advice about sufficient dietary fibre may be all that is needed. If the problem is of recent origin and there are no significant associated signs, a single *glycerin suppository* together with dietary advice may be appropriate. Referral to the doctor would be best if these measures are unsuccessful.

Constipation in pregnancy

Constipation commonly occurs during pregnancy; hormonal changes are responsible and it has been estimated that one in three pregnant women suffers from constipation. Dietary advice concerning the intake of plenty of high-fibre foods and fluids can help. Oral iron, often prescribed for pregnant women, may contribute to the problem.

Stimulant laxatives are best avoided during pregnancy; bulk-forming laxatives are preferable, although they may cause some abdominal discomfort to women when used late in pregnancy (see 'Women's Health').

Constipation in the elderly

Constipation is a common problem in elderly patients for several reasons. Elderly patients are less likely to be physically active; they often have poor natural teeth or false teeth and so may avoid high-fibre foods that are more difficult to chew; multidrug regimens are more likely in elderly patients, who may therefore suffer from drug-induced constipation; fixed ideas about what constitutes a normal bowel habit are common in older patients. If a bulk laxative is to be recommended for an elderly patient, it is of great importance that the pharmacist give advice about maintaining fluid intake to prevent the possible development of intestinal obstruction.

Laxative abuse

Two groups of patients are likely to abuse laxatives: those with chronic constipation who get into a vicious circle by using stimulant laxatives (see p. 103), which eventually results in damage to the nerve

plexus in the colon; and those who take laxatives in the belief that they will control weight, e.g. those who are dieting or, more seriously, women with eating disorders (anorexia nervosa or bulimia), who take very large quantities of laxatives. The pharmacist is in a position to monitor purchases of laxative products and counsel patients as appropriate. Any patient who is ingesting large amounts of laxative agents should be referred to the doctor.

Constipation in practice

Case 1

Mr Johnson is a middle-aged man who occasionally visits your pharmacy. Today he complains of constipation, which he has had for several weeks. He has been having a bowel movement every few days; normally they are every day or every other day. His motions are hard and painful to pass. He has not tried any medicines as he thought the problem would go of its own accord. He has never had problems with constipation in the past. He has been taking *atenolol* tablets 50 mg once a day, for over 1 year. He does not have any other symptoms, except a slight feeling of abdominal discomfort. You ask him about his diet; he tells you that since he was made redundant from his job at a local factory 3 months ago, he has tended to eat less than usual; his dietary intake sounds as if it is low in fibre. He tells you that he has been applying for jobs, with no success so far. He says he feels really down and is starting to think that he may never get another job.

The pharmacist's view

Mr Johnson's symptoms are almost certainly due to the change in his lifestyle and eating pattern. Now that he is not working he is likely to be less physically active and his eating pattern has probably changed. From what he has said, it sounds as if he is becoming depressed because of his lack of success in finding work. Constipation seems to be associated with depression, separately from the constipating effect of some antidepressant drugs.

It would be worth asking Mr Johnson if he is sleeping well (signs of clinical depression include disturbed sleep; either difficulty in getting to sleep or waking early and not being able to get back to sleep). Weight can change either way in depression. Some patients eat for comfort, while others find their appetite is reduced. Depending on his response, you might consider whether referral to his doctor is needed.

To address the dietary problems, he could be advised to start the day with a wholemeal cereal and to eat at least four slices of wholemeal

bread each day. Baked beans are a cheap, good source of fibre. Fresh vegetables are also fibre-rich. It would be important to stress that fluid intake should also be increased. A high-fibre diet means patients should increase their fibre intake until they pass one large, soft stool each day; the amount of fibre needed to produce this effect will vary markedly between patients. The introduction of dietary fibre should be gradual; too rapid an increase can cause griping and wind.

To provide relief from the discomfort, a suppository of *glycerin* or *bisacodyl* could be recommended to produce a bowel evacuation quickly; in the longer term, dietary changes provide the key. He should see the doctor if the suppository does not produce an effect; if it works but the dietary changes have not been effective after 2 weeks, he should go to his doctor. Mr Johnson's medication is unlikely to be responsible for his constipation because, although beta-blockers can sometimes cause constipation, he has been taking the drug for over 1 year with no previous problems.

The doctor's view

The advice given by the pharmacist is sensible. It is likely that Mr Johnson's physical and mental health have been affected by the impact of a significant change in his life. The loss of his job and the uncertainty of future employment is a major and continuing source of stress. The fact that the pharmacist has taken time to check out how he has been affected will in itself be therapeutic. It also gives the pharmacist the opportunity to refer to the doctor if necessary. Many people are reluctant to take such problems to their doctor but a recommendation from the pharmacist might make the process easier. Hopefully the advice given for constipation will at least improve one aspect of his life. If the constipation does not resolve within 2 weeks, Mr Johnson should see his doctor.

Case 2

Your counter assistant asks if you will have a word with a young woman who is in the shop. She was recognised by your assistant as a regular purchaser of stimulant laxatives. You explain to the woman that you will need to ask a few questions because regular use of laxatives may mean an underlying problem, which is not improving. In answer to your questions she tells you that she diets almost constantly and always suffers from constipation. Her weight appears to be within the range for her height. You show her your pharmacy's body mass index (BMI) chart and work out with her where she is on the chart, which confirms your initial feeling. However, she is reluctant to accept your advice, saying that she definitely needs to lose some more

weight. You ask about her diet and she tells you that she has tried all sorts of approaches, most of which involve eating very little.

The pharmacist's view

Unfortunately this sort of story is all too common in community pharmacy, with many women who seek to achieve weight below the recommended range. The pharmacist can explain that constipation often occurs during dieting simply because insufficient bulk and fibre is being eaten to allow the gut to work normally. Perhaps the pharmacist might suggest that she joins a local group, either Weight Watchers or a self-help group (the local health promotion unit will know what is available). Despite the pharmacist's advice, many customers will still wish to purchase laxatives and the pharmacist will need to consider how to handle refusal of sales. Offering stimulant laxatives for sale by self-selection can only exacerbate the problems and make it more difficult to monitor sales and refuse them when necessary.

The doctor's view

This is obviously a difficult problem for the pharmacist. It is inappropriate for the young woman to continue taking laxatives and she could benefit from counselling. However, a challenge from the pharmacist could result in her simply buying the laxatives elsewhere. If, as is likely, she has an eating disorder, she may have very low self-esteem and be denying her problem. Both these factors make it more difficult for the pharmacist to intervene most effectively. An ideal outcome would be appropriate referral, which would depend on local resources but which might initially be to the doctor, or she could be advised about the Eating Disorder Association Helpline 0845 6341414, which can be accessed 8.30 AM–8.30 PM Monday–Friday.

If she is seen by the doctor, an empathic approach is necessary. The most important thing is to give her full opportunity to say what she thinks about the problem, how it makes her feel and how it affects her life. Establishing a supportive relationship with resultant trust between patient and doctor is the major aim of the initial consultation. Once this has been achieved, further therapeutic opportunities can be discussed and decided on together.

Case 3

A man comes into the pharmacy and asks for some good laxative tablets. Further questioning by the pharmacist reveals that the medicine is for his dad who is aged 72. He does not know many details except that his dad has been complaining of increasing constipation

over the last 2–3 months and has tried *senna* tablets without any benefit.

The pharmacist's view

Third-party or proxy consultations are often challenging because the person making the request may not have all of the relevant information. However, in this case the decision is quite clear. The patient needs to be referred to the doctor because of the long history of the complaint and the unsuccessful use of a stimulant laxative.

The doctor's view

Referral to the GP should be recommended in this situation. A *glycerin suppository* is a safe treatment to use in the meantime. Clearly, more information is needed to make an opinion and diagnosis. A prolonged and progressive change in bowel habit is an indication for referral to hospital for further investigations as the father could have a large bowel cancer. The GP would need to gather more information about his symptoms and would perform an examination that would include abdominal palpation and a digital rectal examination. This latter examination could confirm the presence of a rectal tumour. It is likely that an urgent referral would then be made for further investigations as an outpatient. At hospital the investigations could include sigmoidoscopy plus a barium enema X-ray and/or a colonoscopy. In colonoscopy a flexible fibre-optic tube is passed through the anus and then up and around the whole of the large bowel to the caecum.

Diarrhoea

Community pharmacists may be asked by patients to treat existing diarrhoea, or to offer advice on what course of action to take should diarrhoea occur, for example, to holidaymakers. Diarrhoea is defined as an increased frequency of bowel evacuation, with the passage of abnormally soft or watery faeces. The basis of treatment is electrolyte and fluid replacement; in addition, antidiarrhoeals are useful in adults and older children.

What you need to know
Age
Infant, child, adult, elderly
Duration
Severity
Symptoms, associated symptoms
Nausea/vomiting
Fever
Abdominal cramps
Flatulence
Other family members affected?
Previous history
Recent travel abroad?
Causative factors
Medication
Medicines already tried
Other medicines being taken

Significance of questions and answers

Age

Particular care is needed in the very young and the very old. Infants (younger than 1 year) and elderly patients are especially at risk of becoming dehydrated.

Duration

Most cases of diarrhoea will be acute and self-limiting. Because of the dangers of dehydration it would be wise to refer infants with diarrhoea of longer than 1 day's duration to the doctor.

Severity

The degree of severity of diarrhoea is related to the nature and frequency of stools. Both these aspects are important, since misunderstandings can arise, especially in self-diagnosed complaints. Elderly patients who complain of diarrhoea may, in fact, be suffering from faecal impaction. They may pass liquid stools, but with only one or two bowel movements a day.

Symptoms

Acute diarrhoea is rapid in onset and produces watery stools that are passed frequently. Abdominal cramps, flatulence and weakness or malaise may also occur. Nausea and vomiting may be associated with diarrhoea, as may fever. The pharmacist should always ask about vomiting and fever in infants; both will increase the likelihood that severe dehydration will develop. Another important question to ask about diarrhoea in infants is whether the baby has been taking milk feeds and other drinks as normal. Reduced fluid intake predisposes to dehydration.

The pharmacist should question the patient about food intake and also about whether other family members or friends are suffering from the same symptoms, since acute diarrhoea is often infective in origin. Often there are localised minor outbreaks of gastroenteritis, and the pharmacist may be asked several times for advice and treatment by different patients during a short period of time. Types of infective diarrhoea are discussed later in the chapter.

The presence of blood or mucus in the stools is an indication for referral. Diarrhoea with severe vomiting or with a high fever would also require medical advice.

Previous history

A previous history of diarrhoea or a prolonged change in bowel habit would warrant referral for further investigation and it is important that the pharmacist distinguish between acute and chronic conditions. Chronic diarrhoea (of more than 3 weeks' duration) may be caused by bowel conditions such as Crohn's disease, IBS or ulcerative colitis and requires medical advice.

Recent travel abroad

Diarrhoea in a patient who has recently travelled abroad requires referral since it might be infective in origin.

Causes of diarrhoea

Infections

Most cases of diarrhoea are short-lived, the bowel habit being normal before and after. In these situations the cause is likely to be infective (viral or bacterial).

Viral. Viruses are often responsible for gastroenteritis. In infants the virus causing such problems often gains entry into the body via the respiratory tract (rotavirus). Associated symptoms are those of a cold and perhaps a cough. The infection starts abruptly and vomiting often precedes diarrhoea. The acute phase is usually over within 2–3 days, although diarrhoea may persist. Sometimes diarrhoea returns when milk feeds are reintroduced. This is because one of the milk-digestive enzymes is temporarily inactivated. Milk therefore passes through the bowel undigested, causing diarrhoea. The health visitor or doctor would need to give further advice in such situations.

Whilst in the majority the infection is usually not too severe and is self-limiting, it should be remembered that rotavirus infection can cause death. This is most likely in those infants already malnourished and living in poor social circumstances who have not been breastfed.

Bacterial. These are the food-borne infections previously known as food poisoning. There are several different types of bacteria that can cause such infections: *Staphylococcus*, *Campylobacter*, *Salmonella*, *Shigella*, pathogenic *Escherichia coli* and *Bacillus cereus*. The typical symptoms include severe diarrhoea and/or vomiting, with or without abdominal pain. Two commonly seen infections are *Campylobacter* and *Salmonella*, which are often associated with contaminated poultry, although other meats have been implicated. Contaminated eggs have also been found to be a source of *Salmonella*. Kitchen hygiene and thorough cooking are of great importance in preventing infection.

Table 4 summarises the typical features of some of the following infections:

– Bacillary dysentery is caused by *Shigella*. It can occur in outbreaks where there are people living in close proximity and may occur in travellers to Africa or Asia.

– *B. cereus* is usually associated with cooked rice, especially if it has been kept warm or has been reheated. It presents with two different clinical pictures, as shown in Table 4.
– *E. coli* infections are less common but can be severe with toxins being released into the body, which can cause kidney failure.

Antibiotics are generally unnecessary as most food-borne infections resolve spontaneously. The most important treatment is adequate fluid replacement. Antibiotics are used for *Shigella* infections and the more severe *Salmonella* or *Campylobacter* ones. *Ciprofloxacin* may be used in such circumstances.

– *Protozoan* infections are uncommon in Western Europe but may occur in travellers from further afield. Examples include *Entamoeba histolytica* (amoebic dysentery) and *Giardia lamblia* (giardiasis). Diagnosis is made by sending stool samples to the laboratory.

Chronic diarrhoea

Recurrent or persistent diarrhoea may be due to an irritable bowel or, more seriously, a bowel tumour, an inflammation of the bowel (e.g. ulcerative colitis or Crohn's disease), an inability to digest or absorb food (malabsorption, e.g. coeliac disease) or diverticular disease of the colon.

Irritable bowel syndrome (see p. 122). This non-serious but troublesome condition is one of the more common causes of recurrent bowel dysfunction in adolescents and young adults. The patient usually describes the frequent passage of small volumes of stool rather than true diarrhoea. The stools are typically variable in nature, often loose and semi-formed. They may be described as being like rabbit

Table 4 Features of some infections causing diarrhoea

Infection	Incubation	Duration	Symptoms
Staphylococcus	2–6 h	6–24 h	Severe, short-lived; especially vomiting
Salmonella	12–24 h	1–7 days	Mainly diarrhoea
Campylobacter	2–7 days	2–7 days	Diarrhoea with abdominal colic
Bacillus cereus	1–5 h	6–24 h	Vomiting
Bacillus cereus (two types of infection)	8–16 h	12–24 h	Diarrhoea

droppings or pencil-shaped. The frequency of bowel action is also variable as the diarrhoea may alternate with constipation. Often the bowels are open several times in the morning before the patient leaves for work. The condition is more likely to occur at times of stress, it may be associated with anxiety and occasionally it may be triggered by a bowel infection. Inadequate dietary fibre may also be of significance. It is possible that certain foods can irritate the bowel, but this is difficult to prove.

There is no blood present within the motion in an irritable bowel. Bloody diarrhoea may be a result of an inflammation or tumour of the bowel. The latter is more likely with increasing age (from middle age onwards) and is likely to be associated with a prolonged change in bowel habit; in this case diarrhoea might sometimes alternate with constipation.

Medication

Medicines already tried

The pharmacist should establish the identity of any medication that has already been taken to treat the symptoms in order to assess its appropriateness.

Other medicines being taken

Details of any other medication being taken (both OTC and prescribed) are also needed, as the diarrhoea may be drug-induced (Table 5). OTC medicines should be considered; commonly used medicines such as magnesium-containing antacids and iron preparations are examples of medicines that may induce diarrhoea. Laxative abuse should be considered as a possible cause.

When to refer
Diarrhoea of greater than 1 day's duration in children younger than 1 year;
2 days in children under 3 years and elderly patients;
3 days in older children and adults
Association with severe vomiting and fever
Recent travel abroad
Suspected drug-induced reaction to prescribed medicine
History of change in bowel habit
Presence of blood or mucus in the stools

Table 5 Some drugs that may cause diarrhoea

Antacids: *magnesium salts*
Antibiotics
Antihypertensives: *guanethidine* (common side-effect but rarely prescribed); *methyldopa*; beta-blockers (rare)
Digoxin (toxic levels)
Diuretics (*furosemide* (*frusemide*))
Iron preparations
Laxatives
Misoprostol
Non-steroidal anti-inflammatory drugs (NSAIDs)
Selective serotonin reuptake inhibitors (SSRIs)

Treatment timescale

One day in children, otherwise 2 days.

Management

Oral rehydration therapy

The risk of dehydration from diarrhoea is greatest in babies, and rehydration therapy is considered to be the standard treatment for acute diarrhoea in babies and young children. Oral rehydration sachets may be used with antidiarrhoeals in older children and adults.

Rehydration may still be initiated even if referral to the doctor is advised. Sachets of powder for reconstitution are available; these contain sodium as chloride and bicarbonate, glucose and potassium. The absorption of sodium is facilitated in the presence of glucose. A variety of flavours are available.

It is essential that appropriate advice be given by the pharmacist about how the powder should be reconstituted. Patients should be reminded that only water should be used to make the solution (never fruit or fizzy drinks) and that boiled and cooled water should be used for children younger than 1 year. Boiling water should not be used, as it would cause the liberation of carbon dioxide. The solution can be kept for 24 h if stored in a refrigerator. Fizzy, sugary drinks should never be used to make rehydration fluids, as they will produce a hyperosmolar solution that may exacerbate the problem. The sodium content of such drinks, as well as the glucose content, may be high.

Home-made salt and sugar solutions should not be recommended, since the accuracy of electrolyte content cannot be guaranteed, and this accuracy is essential, especially in infants, young children and

elderly patients. Special measuring spoons are available; their correct use would produce a more acceptable solution, but their use should be reserved for the treatment of adults, where electrolyte concentration is less crucial.

Quantities

Parents sometimes ask how much rehydration fluid should be given to children. The following simple rules can be used for guidance; the amount of solution offered to the patient is based on the number of watery stools that are passed. Table 6 provides the volumes required per watery stool.

Other therapy

Loperamide

Loperamide is an effective antidiarrhoeal treatment for use in older children and adults. When recommending *loperamide* the pharmacist should remind patients to drink plenty of extra fluids. Oral rehydration sachets may be recommended. *Loperamide* may not be recommended for use in children under 12 years.

Kaolin

Kaolin has been used as a traditional remedy for diarrhoea for many years. Its use was justified on the theoretical grounds that it would absorb water in the GI tract and would absorb toxins and bacteria onto its surface, thus removing them from the gut. The latter has not been shown to be true and the usefulness of the former is questionable. The use of *kaolin*-based preparations has largely been superseded by oral rehydration therapy, although patients continue to ask for various products containing *kaolin*.

Morphine

Morphine, in various forms, has been included in antidiarrhoeal remedies for many years. The theoretical basis for its inclusion is that

Table 6 Amount of rehydration solution to be offered to patients

Age	Quantity of solution (per watery stool)
Under 1	50 ml (quarter of a glass)
1–5	100 ml (half a glass)
6–12	200 ml (one glass)
Adult	400 ml (two glasses)

morphine, together with other narcotic drugs such as *codeine*, is known to slow the action of the GI tract; indeed, constipation is a well-recognised side-effect of such drugs. However, at the doses included in most OTC preparations, it is unlikely that such an effect would be produced. *Kaolin* and *morphine* mixture remains a popular choice for some patients, despite the lack of evidence of its effectiveness.

Practical points

1 Patients with diarrhoea should be advised to drink plenty of clear, non-milky fluids, such as water and diluted squash.

2 Advice to eat no solid food for 24 h may be appropriate. Breast- or bottle-feeding should be continued in infants. The severity and duration of diarrhoea are not affected by whether milk feeds are continued. A well-nourished child should be the aim, particularly where the infant is poorly nourished to begin with and where the withholding of milk feeds may be more detrimental than in a well-nourished infant, where temporary withdrawal is unimportant. Some doctors continue nevertheless to advise the discontinuation of milk, especially bottle, during the acute phase of infection.

3 Patients with diarrhoea might be best advised to avoid cow's milk, because during diarrhoea the enzyme in the gut that digests milk (lactase) is inactivated. Temporary lactose intolerance can therefore be produced, which makes the diarrhoea worse.

Diarrhoea in practice

Case 1

Mrs Robinson asks what you can recommend for diarrhoea. Her son David, aged 11, has diarrhoea and she is worried that her other two children, Natalie, aged 4, and Tom, aged just over 1 year, may also get it. David's diarrhoea started yesterday; he went to the toilet about five times and was sick once, but has not been sick since. He has griping pains, but is generally well and quite lively. Yesterday he had pie and chips from the local takeaway during his lunch break at school. No one else in the family ate the same food. Mrs Robinson has not given him any medicine, but has some *kaolin* and *morphine* mixture at home and wants to know if David could take some, and also if the other children could take it if necessary.

The pharmacist's view

It sounds as if David has a bout of acute diarrhoea, possibly caused by the food he ate yesterday during lunchtime. He has vomited once, but

now the diarrhoea is the problem. The child is otherwise well. He is 11 years old, so the best plan would be to start oral rehydration with some proprietary sachets, with advice to his mother about how they should be reconstituted. *Kaolin* and *morphine* mixture should not be given to children under 12, and in any case is not considered first-line treatment for diarrhoea. If either or both the other children get diarrhoea, they can also be given some rehydration solution. David should see the doctor the day after tomorrow if his condition has not improved.

The doctor's view

David's diarrhoea could well be due to food poisoning. Oral rehydration is the correct treatment. He should also be told not to eat anything for the next 24 h or so until the diarrhoea has settled. If he wants to drink other fluids in addition to the electrolyte mixture, he should be told to avoid milk.

His symptoms should settle down over the next 24 h. If they persist or he complains of worsening abdominal pain, particularly in the lower right side of the abdomen, his mother should contact the doctor. Rarely, an atypical acute appendicitis may present as a bowel infection.

Case 2

Mrs Choudry is collecting her regular repeat prescription for antihypertensive treatment. You ask how she and the family are, and she tells you that several members of the family have been suffering with diarrhoea on and off. You know that the family recently returned from a trip to India where they had been visiting relatives to attend a family wedding. In answer to your questions, Mrs Choudry tells you that the problem with the diarrhoea started after they returned.

The pharmacist's view

Referral to the GP is needed here as the diarrhoea may be related to the recent travel.

The doctor's view

Referral is a sensible course of action. Clearly more information is required, e.g. date of onset of symptoms, date of return to the UK. It does not sound as if any of the family are acutely ill but it would be necessary to ensure that no one is dehydrated. If the diarrhoea is persisting, it would be helpful to send stool samples to the local public health laboratory for analysis. It is possible that they may be suffering from giardiasis, which can be treated with *metronidazole*. Sometimes

stool samples come back showing no signs of infection, in which case the diarrhoea is considered as being due to postinfection irritability of the bowel. This usually resolves spontaneously with no specific treatment.

Case 3

Mrs Jean Berry wants to stock up on some medicines before her family sets off on their first holiday abroad; they will be going to Spain next week. Mrs Berry tells you she has heard of people whose holidays have been ruined by holiday diarrhoea and she wants you to recommend a good treatment. On questioning, you find out that Mr and Mrs Berry and their two boys aged 10 and 14 will be going on the holiday.

The pharmacist's view

Holiday diarrhoea can be troublesome but can easily be dealt with. Mrs Berry could be advised to buy some *loperamide* capsules, which would be suitable treatment for her, Mr Berry and their 14-year-old son. In addition, she should purchase some oral rehydration sachets for the younger son. The sachets could also be used by other family members.

The pharmacist could also give some valuable advice about the avoidance of potential problems by the Berry family on their first foreign holiday. Fresh fruit should be peeled before eating and hot food should not be eaten other than in restaurants. Roadside snack stalls are best avoided. The question of the quality of drinking water often crops up. Good advice to travellers would be to check with the tour company representative as to the advisability of drinking local water. If in doubt, bottled mineral water can be drunk; such water (the still variety) could also be used to reconstitute rehydration sachets. Ice in drinks may be best avoided, depending on the water supply.

Holiday diarrhoea is usually self-limiting, but if it is still present after several days, medical advice should be sought. If the diarrhoea persists or is recurrent after returning home, the doctor should be seen. Finally, patients would be well advised to be wary of buying OTC medicines abroad. In some countries, a large range of drugs including oral steroids and antibiotics can be purchased OTC. Each year, patients return to Britain with serious adverse effects following the use of oral *chloramphenicol*, for example, which has been prescribed or purchased.

The doctor's view

The pharmacist has covered all the important points. The most likely cause of diarrhoea would be contaminated food or water. The best

treatment of acute diarrhoea is to stop eating and to drink bottled mineral water (with or without electrolyte reconstitution powders). It would be sensible to take an antidiarrhoeal such as *loperamide*.

Case 4

Mr Radcliffe is an elderly man who lives alone. Today, his home help asks what you can recommend for diarrhoea, from which Mr Radcliffe has been suffering for 3 days. He has been passing watery stools quite frequently and feels rather tired and weak. He has sent the home help because he dare not leave the house and go out of reach of the toilet. You check your PMRs, which confirm your memory that he takes several different medicines: *digoxin*, *furosemide* (*frusemide*) and *paracetamol*. Last week you dispensed a prescription for a course of *amoxicillin* (*amoxycillin*). The home help tells you that he has been eating his usual diet and there does not seem to be a link between food and his symptoms.

The pharmacist's view

Mr Radcliffe's diarrhoea may be due to the *amoxicillin*, which he started to take a few days ago. It would be best to call the patient's doctor to discuss the appropriate course of action because Mr Radcliffe's other drug therapy means that fluid loss and dehydration may cause electrolyte imbalance and put him at further risk. The doctor may decide to stop the *amoxicillin*.

The doctor's view

It is likely that the *amoxicillin* has caused the diarrhoea. The most important consideration in management is to ensure adequate fluid and electrolyte replacement. This is particularly so as the elderly (and babies) are not as resilient to the effects of dehydration. In Mr Radcliffe's case things are further complicated by his other medication: *furosemide* and *digoxin*. He is not on any potassium supplement or a potassium-sparing diuretic. Although there may be good reason for this, diuretics such as *furosemide* can lower the plasma potassium level and make *digoxin* dangerously toxic. Unfortunately, potassium can also be lost in diarrhoea, further aggravating this problem. It is therefore reasonable to ask for the doctor to visit and assess.

There is also a small possibility that the diarrhoea could be due to pseudomembranous colitis (PMC), which is caused by a bacterium (*Clostridium difficile*) in the colon and typically occurs as a complication of antibiotic treatment. It is thought that antibiotics upset the normal bowel flora allowing *Clostridium difficile* to flourish. This is a

relatively uncommon condition, which can be caused by most antibiotics, but has been reported most often with *clindamycin*, *ampicillin*, *amoxicillin*, and the cephalosporins. The condition is more likely to occur in the elderly.

The diarrhoea of PMC can range from mild self-limiting symptoms to severe protracted or recurrent episodes and can sometimes be fatal. There is often a low-grade fever, and abdominal pain/cramps may occur. The symptoms usually begin within 1 week of starting antibiotic treatment but may start up to 6 weeks after a course of antibiotics. Where possible, antibiotics should be discontinued in cases of PMC. It is sometimes necessary to treat severe cases with *metronidazole* or *vancomycin*.

Irritable bowel syndrome

IBS is defined as a functional bowel disorder in which abdominal pain is associated with defecation or a change in bowel habit, with the additional features of disordered defecation and abdominal distension. Its cause is unknown. IBS is estimated to affect 20% of adults in the industrialised world, most of whom (up to three quarters) do not consult a doctor. More women with IBS consult a health professional than do men and the incidence of the condition appears to be higher in women. Debate has been fierce about whether IBS has a psychological cause because it is associated with anxiety or depression in many patients. However, differences in bowel sensitivity have been shown in IBS patients compared to those without IBS, although the full picture is not yet clear.

What you need to know
Age
Child, adult
Symptoms
Gastrointestinal
Abdominal pain
Abdominal distension/bloating
Disturbed bowel habit; diarrhoea and/or constipation
Nausea
Other
Urinary symptoms especially frequency
Dyspareunia (pain during intercourse)

Significance of questions and answers

Age

Because of the difficulties in diagnosis of abdominal pain in children, it is best to refer.

IBS usually develops in young adult life. If an older adult is presenting for the first time with no previous history of bowel problems, a referral should be made.

Symptoms

IBS has three key symptoms: abdominal pain (may ease following a bowel movement), abdominal distension/bloating and disturbance of bowel habit.

Abdominal pain

The pain can occur anywhere in the abdomen. It is often central or left-sided and can be severe. When pain occurs in the upper abdomen, it can be confused with peptic ulcer or gall bladder pain. The site of pain can vary from person to person and even for an individual. Sometimes the pain comes on after eating and can be relieved by defecation.

Bloating

A sensation of bloating is commonly reported. Sometimes it is so severe that clothes have to be loosened.

Bowel habit

Diarrhoea and constipation may occur; sometimes they alternate. A morning rush is common, where the patient feels an urgent desire to defecate several times after getting up in the morning and following breakfast, after which the bowels may settle. There may be a feeling of incomplete emptying after a bowel movement. The motion is often described as loose and semi-formed rather than watery. Sometimes it is like pellets or rabbit droppings, or pencil-shaped. There may be mucus present but never blood.

Other symptoms

Nausea sometimes occurs, vomiting is less common.

Patients may also complain of apparently unrelated symptoms such as backache, feeling lethargic and tired. Urinary symptoms may be associated with IBS, e.g. frequency, urgency and nocturia (the need to pass urine during the night). Some women report dyspareunia.

Duration

Patients may present when the first symptoms occur, or may describe a pattern of symptoms, which has been going on for months or even years. If an older person is presenting for the first time referral is most appropriate.

Previous history

You need to know whether the patient has consulted his/her doctor about the symptoms and, if so, what they were told. A history of travel

abroad and gastroenteritis sometimes appears to trigger an irritable bowel. Referral is necessary to exclude an unresolved infection. Any history of previous bowel surgery would suggest a need for referral.

Aggravating factors

Stress appears to play an important role and can precipitate and exacerbate symptoms.

Caffeine often worsens symptoms and its stimulant effect on the bowel and irritant effect on the stomach are well known in any case.

The sweeteners sorbitol and fructose have also been reported to aggravate IBS. Other foods that have been implicated are milk and dairy products, chocolate, onions, garlic, chives and leeks.

Medication

The patient may already have tried prescribed or OTC medicines to treat the condition. You need to know what has been tried and whether it produced any improvement. It is also important to know what other medicines the patient is taking. IBS is associated with anxiety and depression in many patients but it is not known whether this is cause or effect.

When to refer
Children
Older person with no previous history of IBS
Pregnant women
Blood in stools
Unexplained weight loss
Caution in patients aged over 45 with changed bowel habit
Signs of bowel obstruction
Unresponsive to appropriate treatment

Treatment timescale

Symptoms should start to improve within 1 week.

Management

Antispasmodics

Antispasmodics are the mainstay of OTC treatment of IBS and research trials show consistent improvement in abdominal pain with smooth muscle relaxants. *Alverine citrate*, *peppermint* and *mebeverine* are

used. They work by a direct effect on the smooth muscle of the gut, causing relaxation and thus reducing abdominal pain. The patient should see an improvement within a few days of starting treatment and should be asked to return to you in 1 week so you can monitor progress. It is worth trying a different antispasmodic if the first has not worked. Side-effects from antispasmodics are rare.

All antispasmodics are contraindicated in paralytic ileus, a serious condition that fortunately occurs only rarely (e.g. after abdominal operations and in peritonitis). Here the gut is not functioning and is obstructed. The symptoms would be severe pain, no bowel movements and possibly vomiting of partly digested food. Immediate referral is needed.

Alverine citrate

Alverine citrate is given in a dose of 60–120 mg (one or two capsules) up to three times a day. Remind the patient to take the capsules with water and not to chew them. Side-effects are rare but nausea, dizziness, pruritus, rash and headache have occasionally been reported. The drug should not be recommended for pregnant or breastfeeding women or for children. *Alverine citrate* is also available in a combination product with *sterculia* (see 'Bulking agents', below).

Peppermint oil

Peppermint oil has been used for many years as an aid to digestion and has an antispasmodic effect. Capsules containing 0.2 ml of the oil are taken in a dose of one or two capsules three times a day, 15–30 min before meals. They are enteric-coated with the intention that the *peppermint oil* is delivered beyond the stomach and upper small bowel. Patients should be reminded not to chew the capsules as not only will this render the treatment ineffective, it will also cause irritation of the mouth and oesophagus.

This treatment should not be recommended for children. Occasionally *peppermint oil* causes heartburn and so is best avoided in patients who already suffer from this problem. Allergic reactions can occur and are rare; rash, headache and muscle tremor have been reported in such cases. One trial involving 110 people showed improvement in symptoms of abdominal pain, distension and stool frequency.

Mebeverine hydrochloride

Mebeverine hydrochloride is used at a dose of 135 mg three times a day. The dose should be taken 20 min before meals. The drug should not be recommended for pregnant or breastfeeding women, for children under 10 or for patients with porphyria.

Bulking agents

Traditionally, patients with IBS were told to eat a diet high in fibre, and raw wheat bran was often recommended as a way of increasing the fibre intake. Bran is no longer recommended in IBS (see 'Practical points, Diet'). Bulking agents such as ispaghula containing soluble fibre can help some patients. It may take a few weeks of experimentation to find the dose that suits the individual patient. Remind the patient to increase fluid intake to take account of the additional fibre. Bulking agents are also available in combination with antispasmodics. The evidence for benefit is not strong, as studies have involved small numbers of patients. Possible positive benefit has been shown for ispaghula husk.

Antidiarrhoeals

Patients who complain of diarrhoea may be describing a frequent urge to pass stools, but the stools may be loose and formed rather than watery. Use of OTC antidiarrhoeals such as *loperamide* is appropriate only on an occasional, short-term basis. In two studies involving a total of 100 patients, *loperamide* improved diarrhoea, including frequency of bowel movements, but not abdominal pain or distension.

Practical points

Diet

Patients with IBS should follow the recommendations for a healthy diet (low fat, low sugar, high fibre). Bran used to be widely recommended but more recent research indicates that consumption of bran (which contains insoluble fibre) is not helpful and can make symptoms worse. Dietary sources of soluble fibre can be recommended including oats and pulses.

Some patients find that excluding foods which they know exacerbate their symptoms is helpful (see 'Aggravating factors' above). The sweeteners sorbitol and fructose can make symptoms worse and they are found in many foods: the patients need to check labels at the supermarket. Cutting out caffeine, milk and dairy products, and chocolate may be worth trying. Although some patients benefit from the withdrawal of milk and dairy products, there is no evidence of lactase deficiency in IBS. Remind patients that caffeine is included in many soft drinks and so they should check labels.

Complementary therapies

Some patients find relaxation techniques helpful. Videos and audio tapes are available to teach complementary therapies.

Studies have shown that hypnotherapy is of benefit in IBS. If patients want to try this, they should consult a registered hypnotherapist. Others may benefit from traditional acupuncture, reflexology, aromatherapy or homoeopathy.

Chinese herbal medicine

A recent high-quality randomised 16-week trial showed benefit (global improvement) from standard and individualised Chinese herbal treatment for IBS. The numbers needed to treat (NNTs) to produce benefit were 2.3 for standard and 3.2 for individualised treatment. The results were highly statistically significant. The herbal medicine in this trial was prepared and dispensed by a herbal practitioner. One of the difficulties in recommending this form of treatment is the lack of control and consistency of the ingredients in herbal preparations.

Irritable bowel syndrome in practice

Case 1

Joanna Mathers is a 29-year-old woman who asks to speak to the pharmacist. She has seen an advertisement for an antispasmodic for IBS and wonders whether she should try it. On questioning, she tells you that she has been getting stomach pains and bowel symptoms for several months, two or three times a month. She thinks her symptoms seem to be associated with business lunches and dinners at important meetings and include abdominal pain, a feeling of abdominal fullness, diarrhoea, nausea and sometimes vomiting. In answer to your specific question about morning symptoms, Joanna says that sometimes she feels the need to go to the toilet first thing in the morning and may have to go several times. Sometimes she has been late for work because she felt she couldn't leave the house due to the diarrhoea. Joanna tells you that she works as a marketing executive and that her job is pressurised and stressful when there are big deadlines or client meetings. Joanna drinks six or seven cups of coffee a day and says her diet is 'whatever I can get at work and something from the freezer when I get home'. She is not taking any other medicines and has not been to the doctor about her problems as she didn't want to bother him.

The pharmacist's view

The picture that has emerged indicates IBS. She has the key symptoms and there is a link to stress at work. It would be worth trying an antispasmodic (*alverine*, *peppermint oil* or *mebeverine*) for 1 week

and asking Joanna to come back at the end of that time. She also needs a careful explanation of aggravating factors for IBS and might want to try a gradual reduction in her intake of coffee over the next few days. If there is no improvement, a different antispasmodic could be tried for a further week, with referral then if needed.

The doctor's view

Joanna gives a clear history of IBS. Her symptoms are likely to settle with the pharmacist's advice and treatment. There is up to a 60% placebo response rate in IBS sufferers, so it would be surprising if she did not improve when next reviewed. If there were no improvement, then a referral would be sensible. A referral would give her doctor an opportunity to deal with her concerns about what was wrong and give her an appropriate explanation of IBS. She could also be given some time to consider how she might tackle her work pressures. Plenty of information is available on the web, which she could be advised to look at, e.g. www.ibsnetwork.org.uk.

Case 2

Jane Dawson asks to see the pharmacist. She is in her early twenties and says she has been getting some upper abdominal pain after food. She wants to try a stomach medicine. On further questioning she says that she has had an irritable bowel before but this is different, although she does admit that her bowels have been troublesome recently and she has noticed some urinary frequency. Jane says that she has been constipated and felt bloated. She says that she went to her doctor last year and was told she had IBS. The doctor said it was all due to stress, which had upset her. Over the last year she has started a new job and moved into new accommodation. She eats a healthy diet and exercises regularly.

The pharmacist's view

The history here is not straightforward and although Jane's symptoms are indicative of IBS, which she says she has had before, the symptoms are different on this occasion. The best course of action is to refer her to the doctor for further investigation.

The doctor's view

Jane probably has IBS but there is insufficient information so far to make that diagnosis. It is not uncommon to have upper abdominal pain with IBS, but other possibilities need to be considered. It sounds as though Jane thinks it is coming from her stomach. She may fear that she has an ulcer. She also mentions urinary frequency, which may well

be associated with IBS but could be a urinary infection. A referral to her doctor is sensible to make a complete assessment of her symptoms. It is likely that the assessment would just involve listening to her description of her problem, gathering more information and a brief examination of her abdomen. A urine sample would show whether or not she had a urinary infection. If there was still doubt about the diagnosis, a referral to a gastroenterologist at the local hospital could be made. Between 20% and 50% of referrals to gastroenterologists turn out to be due to IBS. The main purpose of referral is for a diagnosis as there is no therapeutic advantage.

If the doctor thinks Jane has IBS, an explanation of the syndrome would be helpful in addition to dealing with her concerns about a stomach ulcer. Whether or not psychological factors cause IBS there is no doubt that the stresses of life can aggravate symptoms. It therefore makes sense to help sufferers to make this connection so they can consider different ways of dealing with stress.

Often the above approach is effective treatment in itself. However, if Jane did want some medication, a bulk bowel regulator to help her constipation plus some antispasmodic tablets would be of value.

Haemorrhoids

Haemorrhoids (commonly known as piles) can produce symptoms of itching, burning, pain, swelling and discomfort in the perianal area and anal canal and rectal bleeding. Haemorrhoids are swollen veins, rather like varicose veins, which protrude into the anal canal (internal piles). They may swell so much that they hang down outside the anus (external piles). Haemorrhoids are often caused or exacerbated by inadequate dietary fibre or fluid intake. The pharmacist must, by careful questioning, differentiate between this minor condition and others that may be potentially more serious.

What you need to know
Duration and previous history
Symptoms
Itching, burning
Soreness
Swelling
Pain
Blood in stools
Constipation
Bowel habit
Pregnancy
Other symptoms
Abdominal pain/vomiting
Weight loss
Medication

Significance of questions and answers

Duration and previous history

As an arbitrary guide, the pharmacist might consider treating haemorrhoids of up to 3 weeks' duration. It would be useful to establish whether the patient has a previous history of haemorrhoids and if the doctor has been seen about the problem. A recent examination by the doctor that has excluded serious symptoms would indicate that treatment of symptoms by the pharmacist would be appropriate.

Symptoms

The term haemorrhoids includes internal and external piles, which can be further classified as: (1) those which are confined to the anal canal and cannot be seen; (2) those which prolapse through the anal sphincter on defecation, then reduce by themselves or are pushed back through the sphincter after defecation by the patient; and (3) those which remain persistently prolapsed and outside the anal canal. These three types are sometimes referred to as first, second and third degree, respectively. Predisposing factors for haemorrhoids include diet, sedentary occupation and pregnancy and there is thought to be a genetic element.

Pain

Pain is not always present; if it is, it may take the form of a dull ache and may be worse when the patient is having a bowel movement. A severe, sharp pain on defecation may indicate the presence of an anal fissure, which can have an associated sentinel pile (a small skin tag at the posterior margin of the anus) and requires referral. A fissure is a minute tear in the skin of the anal canal. It is usually caused by constipation and can often be managed conservatively by correcting this and using a local anaesthetic-containing cream or gel. In severe cases a minor operation is sometimes necessary.

Irritation

The most troublesome symptom for many patients is itching and irritation of the perianal area rather than pain. Persistent or recurrent irritation, which does not improve, is sometimes associated with rectal cancer and should be referred.

Bleeding

Blood may be deposited onto the stool from internal haemorrhoids as the stool passes through the anal canal. This fresh blood will appear bright red. It is typically described as being splashed around the toilet pan and may be seen on the surface of the stool or on the toilet paper. If blood is mixed with the stool, it must have come from higher up the GI tract, and will be dark in colour (altered). If rectal bleeding is present, the pharmacist would be well advised to suggest that the patient see the doctor so that an examination can be performed to exclude more serious pathology such as tumour or polyps. Colorectal cancer can cause rectal bleeding. The disease is unusual in patients under 50 and the pharmacist should be alert for the middle-aged patient with rectal bleeding. This is particularly so if there has been a significant and sustained alteration in bowel habit.

Constipation

Constipation is a common causatory or exacerbatory factor in haemorrhoids. Insufficient dietary fibre and inadequate fluid intake may be involved, although the pharmacist should also consider the possibility of drug-induced constipation.

Straining at stool will occur if the patient is constipated; this increases the pressure in the haemorrhoidal blood vessels in the anal canal and haemorrhoids may result. If piles are painful, the patient may try to avoid defecation and ignoring the call to open the bowels will make the constipation worse.

Bowel habit

A persisting change in bowel habit is an indication for referral, as it may be caused by a bowel cancer. Seepage of faecal material through the anal sphincter (one form of faecal incontinence) can produce irritation and itching of the perianal area and may be caused by the presence of a tumour.

Pregnancy

Pregnant women have a higher incidence of haemorrhoids than non-pregnant women. This is thought to be due to pressure on the haemorrhoidal vessels due to the gravid uterus. Constipation in pregnancy is also a common problem because raised progesterone levels mean that the gut muscles tend to be more relaxed. Such constipation can exacerbate symptoms of haemorrhoids. Appropriate dietary advice can be offered by the pharmacist (see 'Women's Health').

Other symptoms

Symptoms of haemorrhoids remain local to the anus. They do not cause abdominal pain, distension or vomiting. Any of these more widespread symptoms suggest other problems and require referral.

Tenesmus (the desire to defecate when there is no stool present in the rectum) sometimes occurs when there is a tumour in the rectum. The patient may describe a feeling of often wanting to pass a motion but no faeces being present. This symptom requires urgent referral.

Medication

Patients may already have tried one or more proprietary preparations to treat their symptoms. Some of these products are advertised widely, since the problem of haemorrhoids is perceived as potentially embarrassing and such advertisements may sometimes discourage patients from describing their symptoms. It is therefore important for the pharmacist to identify the exact nature of the symptoms being experi-

enced and details of any products used already. If the patient is constipated, the use of any laxatives should be established.

Present medication

Haemorrhoids may be exacerbated by drug-induced constipation and the patient should be carefully questioned about current medication, including prescription and OTC medicines. A list of drugs that may cause constipation can be found on p. 103. Rectal bleeding in a patient taking *warfarin* or another anticoagulant is an indication for referral.

When to refer
Duration of longer than 3 weeks
Presence of blood in the stools
Change in bowel habit (persisting alteration from normal bowel habit)
Suspected drug-induced constipation
Associated abdominal pain/vomiting

Treatment timescale

If symptoms have not improved after 1 week, patients should see their doctor.

Management

Symptomatic treatment of haemorrhoids can provide relief from discomfort but, if present, the underlying cause of constipation must also be addressed. The pharmacist is in a good position to offer dietary advice, in addition to treatment, to prevent the recurrence of symptoms in the future.

Local anaesthetics (e.g. benzocaine, lidocaine (lignocaine))

Local anaesthetics can help to reduce the pain and itching associated with haemorrhoids. There is a possibility that local anaesthetics may cause sensitisation and their use is best limited to a maximum of 2 weeks.

Skin protectors

Many antihaemorrhoidal products are bland, soothing preparations containing skin protectors (e.g. *zinc oxide* and *kaolin*). These products have emollient and protective properties. Protection of the perianal

skin is important, because the presence of faecal matter can cause symptoms such as irritation and itching. Protecting agents form a barrier on the skin surface, helping to prevent irritation and loss of moisture from the skin.

Topical steroids

Ointment and suppositories containing *hydrocortisone* with skin protectors, previously POM, are now available OTC. The steroid reduces inflammation and swelling to give relief from itching and pain. The treatment should be used each morning and at night and after a bowel movement. The use of such products is restricted to those over 18. Treatment should not be used continuously for longer than 7 days.

Astringents

Astringents such as *zinc oxide*, *hamamelis* (witch hazel) and *bismuth salts* are included in products on the theoretical basis that they will cause precipitation of proteins when applied to mucous membranes or skin which is broken or damaged. A protective layer is then thought to be formed, helping to relieve irritation and inflammation. Some astringents also have a protective and mild antiseptic action (e.g. *bismuth*).

Antiseptics

These are among the ingredients of many antihaemorrhoidal products, including the medicated toilet tissues. They do not have a specific action in the treatment of haemorrhoids. *Resorcinol* has antiseptic, antipruritic and exfoliative properties. The exfoliative action is thought to be useful by removing the top layer of skin cells and aiding penetration of medicaments into the skin. *Resorcinol* can be absorbed systemically via broken skin if there is prolonged use and its antithyroid action can lead to the development of myxoedema (hypothyroidism).

Counter-irritants

Counter-irritants such as *menthol* are sometimes included in antihaemorrhoidal products on the basis that their stimulation of nerve endings gives a sensation of cooling and tingling, which distracts from the sensation of pain. *Menthol* and *phenol* also have antipruritic actions.

Shark liver oil/live yeast

These agents are said to promote healing and tissue repair, but there is no scientific evidence to support such claims.

Laxatives

The short-term use of a laxative to relieve constipation might be considered. A stimulant laxative (e.g. *senna*) could be supplied for 1 or 2 days to help deal with the immediate problem while dietary fibre and fluids are being increased. For patients who cannot or choose not to adapt their diet, bulk laxatives may be used long-term.

Practical points

Self-diagnosis

Patients may say that they have piles, or think they have piles, but careful questioning by the pharmacist is needed to check whether this self-diagnosis is correct. If there is any doubt, referral is the best course of action.

Hygiene

The itching of haemorrhoids can often be improved by good anal hygiene, since the presence of small amounts of faecal matter can cause itching. The perianal area should be washed with warm water as frequently as is practicable, ideally after each bowel movement. Soap will tend to dry the skin and could make itching worse, but a mild soap could be tried if the patient wishes to do so. Moist toilet tissues are available and these can be very useful where washing is not practical, e.g. at work during the daytime, and some patients prefer them. These tissues are better used with a patting rather than a rubbing motion, which might aggravate symptoms. Many people with haemorrhoids find that a warm bath soothes their discomfort.

An increased intake of dietary fibre will increase bowel output, so patients should be advised to take care in wiping the perianal area and to use soft toilet paper to avoid soreness after wiping.

How to use OTC products

Ointments and creams can be used for internal and external haemorrhoids and should be applied in the morning, at night and after each bowel movement. An applicator is included in packs of ointments and creams and patients should be advised to take care in its use, to avoid any further damage to the perianal skin.

Suppositories can be recommended for internal haemorrhoids. After removing the foil or plastic packaging (patients have been known to try and insert them with the packaging left on), a suppository should be inserted morning, night and after bowel movements. Insertion is easier if the patient is crouching or lying down.

Haemorrhoids in practice

Case 1

Tom Harris, a customer whom you know quite well, asks if you can recommend something for his usual problem. You ask him to tell you more about it: Mr Harris suffers from piles occasionally; you have dispensed prescriptions for Anusol HC and similar products in the past; and have previously advised him about dietary fibre and fluid intake. He has been away on holiday for 2 weeks and says he hasn't been eating the same foods he does when at home. His symptoms are itching and irritation of the perianal area but no pain and he has a small swelling, which hangs down from the anus after he has passed a motion, but which he is able to push back again. He is a little constipated, but he is not taking any medicines.

The pharmacist's view

Mr Harris has a previous history of haemorrhoids, which have been diagnosed and treated by his doctor. It is likely that his holiday and temporary change in diet have caused a recurrence of the problem, so that he now has a second-degree pile, and it would be reasonable to suggest symptomatic treatment for a few days. You could recommend the use of an ointment preparation containing *hydrocortisone* and skin protectors for up to 1 week, and remind Mr Harris that the area should be kept clean and dry. You might consider recommending a laxative to ease the constipation until Mr Harris's diet gets back to normal (you advise that he returns to his usual high-fibre diet); a small supply of a stimulant laxative (perhaps a stimulant/stool softener such as *docusate sodium*) would be reasonable. He should see his doctor after 1 week if the problem has not cleared up.

The doctor's view

The treatment suggested by the pharmacist should settle Mr Harris's symptoms within 1 week. The treatment is of course symptomatic and not curative. If he continues to suffer from frequent relapse, referral should be considered. His doctor could advise whether or not to refer him for injection or removal of the piles.

Case 2

Mr Briggs is a local shopkeeper in his late fifties who wants you to recommend something for his piles. He tells you that he has had them for quite a while – a couple of months. He has tried several different ointments and suppositories, all to no avail. The main problem now is bleeding, which has become worse. In fact he tells you, somewhat

embarrassed, that he has been buying sanitary towels because this is the only way he can prevent his clothes from becoming stained. He is not constipated and has no pain.

The pharmacist's view

Mr Briggs should be referred to his doctor at once. His symptoms have a history of 2 months and there must be quite profuse rectal bleeding, which may well be due to a more serious disease. He has already tried some OTC treatments, with no success. His age and the description of his symptoms mean that further investigation is needed.

The doctor's view

Mr Briggs should be advised to see his doctor. This is not a typical presentation of piles. He will need a more detailed assessment by his doctor who will need to look for a cancer of the colon or rectum. Piles can bleed at times other than when defecating but this is uncommon. The doctor would gather more information by questioning and from an examination. The examination would usually include a digital rectal assessment to determine whether or not a rectal tumour is present. It is quite likely that this man would require outpatient hospital referral for further investigations, which would involve sigmoidoscopy and barium enema.

Case 3

Caroline Andrews is a young woman in her mid-twenties, who works as a graphic designer in a local art studio. She asks your advice about an embarrassing problem: she is finding it very painful to pass motions. On questioning, she tells you she has had the problem for a few days and has been constipated for about 2 weeks. She eats a diet that sounds relatively low in fibre and has been eating less than usual because she has been very busy at work. Caroline says she seldom takes any exercise. She takes the contraceptive pill but is not taking any medicines and has no other symptoms such as rectal bleeding.

The pharmacist's view

Caroline would probably be best advised to see her doctor, since the symptoms and pain which she has described might be due to an anal fissure, though they may be caused by a haemorrhoid.

The doctor's view

A fissure would be the most likely cause of Caroline's problem. An examination by her doctor should quickly confirm this. Correction of the constipation and future preventative dietary advice could well

solve the problem. The discomfort could be helped by a local anaesthetic-containing cream or gel. If this is applied prior to a bowel action, the discomfort would be less. In severe cases that are not settling, referral to a specialist surgeon is necessary in order to release one of the muscles in spasm for rapid relief of pain. Topical nitrate (e.g. *glyceryl trinitrate* 0.2–0.3% *ointment*) is also now used by hospital specialists to treat anal fissure (unlicensed indication).

Skin Conditions

Eczema/dermatitis

Eczema is a term used synonymously with dermatitis. The latter is more commonly used when an external precipitating factor is present (contact dermatitis). The rashes produced have similar features but the distribution on the body varies and can be diagnostic. Atopic eczema affects up to 20% of children, in many of whom it disappears or greatly improves with age such that 2–10% of adults are affected. Atopy is a term that has been used to describe a group of diseases, e.g. eczema, asthma and hay fever, which run in families.

The rash of eczema typically presents as dry flaky skin that may be inflamed and have small red spots. The skin may be cracked and weepy and sometimes becomes thickened. The rash is irritating and can be extremely itchy. Many cases of mild to moderate eczema can be managed by the patient with support from the pharmacist.

What you need to know
Age
Distribution of rash
Occupation/contact
Previous history
History of hay fever/asthma
Aggravating factors
Medication

Significance of questions and answers

Age/distribution

The distribution of the rash tends to vary with age. In infants, it is usually present around the nappy area, neck, back of scalp, face, limb creases and backs of the wrists.

In white children, the rash is most marked in the flexures: behind the knees, on the inside of the elbow joints, around the wrists, as well as the hands, ankles, neck and around the eyes. In black and Asian children, the rash is often on the extensor surface of the joints and may have a more follicular appearance.

In adults, the neck, the backs of the hands, the groin, around the anus, the ankles and the feet are the most common sites. The rash of intertrigo is caused by a fungal infection and is found in skin folds or occluded areas such as under the breasts in women and in the groin or armpits.

Occupation/contact

Contact dermatitis may be caused by substances that irritate the skin or spark off an allergic reaction. Irritant contact dermatitis is most commonly caused by prolonged exposure to water (wet work). Typical occupations include cleaning, hairdressing, food processing, fishing and metal engineering. Substances that can irritate the skin include alkaline cleansing agents, degreasing agents, solvents and oils. Such substances either cause direct and rapid damage to the skin or, in the case of weaker irritants, exert their irritant effect after continued exposure. Napkin dermatitis is an example of irritant dermatitis, and can be complicated by infection, e.g. thrush.

In other cases, the contact dermatitis is caused by an allergic response to substances which include chromates (present in cement and rust-preventive paint), nickel (present in costume jewellery and as plating on scissors), rubber and resins (two-part glues and the resin colophony in adhesive plasters), dyes, certain plants (e.g. primula), oxidising and reducing agents (as used by hairdressers when perming hair), and medications (including *topical corticosteroids*, *lanolin*, *neomycin*, *cetyl stearyl alcohol*). Eye make-up can also cause allergic contact dermatitis.

Clues as to whether or not a contact problem is present can be gleaned from knowledge of site of rash, details of job and hobbies, onset of rash and agents handled, and improvement of rash when away from work or on holiday.

Previous history

Patients may ask the pharmacist to recommend treatment for eczema, which has been diagnosed by the doctor. In cases of mild to moderate eczema, it would be reasonable for the pharmacist to recommend the use of emollients and to advise on skin care. *Topical hydrocortisone* and *clobetasone* preparations can be recommended for the treatment of mild to moderate eczema. However, where severe or infected exacerbations of eczema have occurred, the patient is best referred to the doctor.

Occasionally, pharmacists receive requests for *topical hydrocortisone* or *clobetasone* products from patients on the recommendation of

their doctors. It can be difficult to explain why such a sale cannot legally be made if the product is for use on the face or anogenital area or for severe eczema. Pharmacists can minimise such problems by ensuring that local family doctors (especially those in training) are aware of the restrictions that apply to the sale of hydrocortisone and clobetasone OTC.

History of hay fever/asthma

Many eczema sufferers have associated hay fever and/or asthma. There is often a family history (in about 80% of cases) of eczema, hay fever or asthma. Eczema occurring in such situations is called atopic eczema. The pharmacist can enquire about the family history of these conditions.

Aggravating factors

Atopic eczema may be worsened during the hay fever season and by house dust or animal danders. Factors that dry the skin such as soaps or detergents and cold wind can aggravate the condition. Certain clothing such as woollen material can irritate the skin. In a small minority of sufferers (less than 5%), cow's milk, eggs and food colouring (tartrazine) have been implicated. Emotional factors, stress and worry can sometimes exacerbate eczema. Antiseptic solutions applied directly to the skin or added to the bathwater can irritate the skin.

Medication

Contact dermatitis may be caused or made worse by sensitisation to topical medicaments. The pharmacist should ask which treatments have already been used. Topically applied local anaesthetics, antihistamines, antibiotics and antiseptics can all provoke allergic dermatitis. *Lanolin* used to be a common sensitiser. Very highly purified *lanolin* is now available, and sensitisation problems appear to have been eradicated. Some preservatives may cause sensitisation. Information about different preparations and their formulations can be obtained from the local pharmacist or from the manufacturer of the product. The BNF is also a good source of information on this subject, with a list of additives for each topical product and excipients that may be associated with sensitization.

If the patient has used a preparation, which the pharmacist considers appropriate for the condition, correctly but there has been no improvement or the condition has worsened, the patient should see the doctor.

When to refer
Evidence of infection (weeping, crusting, spreading)
Severe condition: badly fissured/cracked skin, bleeding
Failed medication
No identifiable cause (unless previously diagnosed as eczema)
Duration of longer than 2 weeks

Treatment timescale

Most cases of mild to moderate atopic eczema, irritant and allergic dermatitis should respond to skin care and treatment with OTC products. If no improvement has been noted after 1 week, referral to the doctor is advisable.

Management

Skin rashes tend quite understandably to cause much anxiety. There is also a social stigma associated with skin disease. Many patients will therefore have been seen by their doctor. Pharmacists are most likely to be involved when the diagnosis has already been made or when the condition first presents but is very mild.

However, with increasing recognition that patients can manage mild to moderate eczema, and as much of the management involves advice and the use of emollients, the pharmacist is in a good position to help, with short-term use of OTC topical steroids where needed. Where the pharmacist is able to identify a cause of irritant or allergic dermatitis, *topical hydrocortisone* or *clobetasone* may be recommended.

Emollients

Emollients are the key to managing eczema and are medically inert creams and ointments which can be used to soothe the skin, reduce irritation, prevent the skin from drying, act as a protective layer and be used as a soap substitute. They may be applied directly to the skin or added to the bathwater.

There are many different types of emollient preparation that vary in their degree of greasiness. The greasy preparations such as white soft paraffin are often the most effective, especially with very dry skin, but have the disadvantage of being messy and unpleasant to use. Patient preference is very important and plays a major part in compliance with emollient treatments. Patients will understandably not use a preparation they find unacceptable. Patients may need to try several different emollients before they find one that suits them, and they may

need to have several different products (e.g. for use as a moisturiser, for use in the bath, for use as a soap substitute when washing or showering). Emollient preparations should be used as often as needed to keep the skin hydrated and moist. Several and frequent applications each day may be required to achieve this.

Standard soaps have a drying effect on the skin and can make eczema worse. Aqueous cream can be used as a soap substitute. It should be applied to dry skin and rinsed off with water. Proprietary skin washes are also available. Adding emulsifying ointment or a proprietary bath oil to the bath is helpful. Emulsifying ointment should first be mixed with water (1 or 2 tablespoonfuls of ointment in a bowl of hot water) before being added to the bath to ensure distribution in the bathwater. Some patients with eczema believe, incorrectly, that bathing will make their eczema worse. This is not the case providing appropriate emollient products are used and standard soaps and perfumed bath products are avoided, and in fact, bathing to remove skin debris and crusts is beneficial.

Advice

This could include the identification of possible aggravating or precipitating factors. If the history is suggestive of an occupationally associated contact dermatitis, then referral is advisable. The doctor may feel in turn that referral to a dermatologist is appropriate. It is sometimes necessary for a specialist to perform patch testing to identify the cause of contact dermatitis.

Further advice could be given regarding the use of ordinary soaps that tend to dry the skin and their alternatives (soap substitutes). If steroid creams have been prescribed and emollients are to be used, the pharmacist is in a good position to check that the patient understands the way in which they should be used.

Topical corticosteroids

Hydrocortisone cream and ointment and *clobetasone* 0.05% can be sold OTC for a limited range of indications. *Topical hydrocortisone* OTC is licensed for the treatment of irritant and allergic dermatitis, insect bites and mild to moderate eczema. OTC *hydrocortisone* is contraindicated where the skin is infected (e.g. athlete's foot or cold sores), in acne, on the face and anogenital areas. Children aged over 10 and adults can be treated, and any course must not be longer than 1 week. Only proprietary OTC brands of *topical hydrocortisone* can be used; dispensing packs may not be sold.

Topical clobetasone 0.05% is a P medicine for the short-term treatment and control of patches of eczema and dermatitis in people aged

12 and over. The indications include atopic eczema and primary irritant or allergic dermatitis and exclude seborrhoeic dermatitis

Antipruritics

Antipruritic preparations are sometimes useful although evidence of effectiveness is lacking. The itch of eczema is not histamine-related so the use of antihistamines other than that of sedation at night is not indicated. *Aqueous calamine cream* can be used and adding 1% menthol gives additional antipruritic and cooling actions.

Crotamiton can reduce the discomfort of itchy skin and is available in cream and lotion forms. A combination product containing *crotamiton* with *hydrocortisone* is available. Indications for use are the same as for *topical hydrocortisone* for contact dermatitis (irritant or allergic), insect bites or stings, and mild to moderate eczema. The same restrictions on use apply (see 'Topical corticosteroids' above).

Support for patients

The National Eczema Society provides information and support through its website www.eczema.org, a telephone helpline and written information.

Eczema and dermatitis in practice

Patients' perspectives

'I have lived with eczema all my life. I am now 33. My father had eczema and asthma. And the youngest of my three children also suffers with eczema. I know the heartache of this disease well. I have learned to control my eczema through my lifetime, but it takes quite a lot of trial and error to find the things that work and to avoid the things that set it off. Parents of kids with eczema need to listen to them and be patient with them because they are probably miserable, like I was as a child.

'By the time I was about 18 or 19 my eczema had practically gone. My skin is still very sensitive and quite dry but is mostly OK. I go through phases where it breaks out behind my knees, on my forearms, on the back of my neck and on my lower back. When this happens, extra moisturiser and OTC *hydrocortisone cream* bring it under control again.

'Managing atopic dermatitis is like taking care of the family car. When the car breaks down, you take it to the mechanic and get it fixed. That's like managing a flare-up of eczema with topical

steroids . . . but the maintenance is still needed. Your car may be mended, but you still have to put oil in it regularly or the engine will seize up. And, like your car, you can do everything right – change the oil when you're supposed to – and it can still break down on you.'

Case 1

Sandra Thompson asks your advice about her 4-year-old daughter Janine whose eczema has worsened recently. She tells you that she has been using Chinese herbs, which have proved very helpful until the last week or so. The eczema has flared up especially on her arms and legs. She would like to use a safe cream but not a steroid cream as she has heard about side-effects. Janine is not with her mother.

The pharmacist's view

Chinese herbal treatments have become popular for eczema. Their exact contents and the amounts of their constituent active ingredients are difficult to identify. Ironically, analysis of some of these herbal treatments showed them to contain active ingredients with steroidal effects. Janine should be seen by the family doctor as the eczema has flared up and without seeing the child it is difficult to assess its severity. However, the mother's comments and the history indicate that medical assessment would be helpful.

The doctor's view

The flare-up of her eczema could be due to an infection. The dry flaky skin can be an ideal site for infections to thrive. If that happens, the eczema is further worsened. It would be advisable for Janine to be referred to her GP. The GP might take a skin swab to confirm an infection and start oral antibiotics with a steroid cream, which could be combined with a topical antibiotic. In this case, it would be necessary to check out Ms Thompson's concerns about steroid creams. With appropriate information she may well be persuaded to try one. It would be best to advise her to discontinue the Chinese herbs as they are not subject to quality control and regulation.

Case 2

Ray Timpson is a local man in his mid-thirties and a regular customer. Today he wants to buy some *hydrocortisone cream* for his eczema, which has worsened. He has had eczema for many years and usually obtains his *hydrocortisone cream* on a repeat prescription from his doctor. As a child, Mr Timpson was asthmatic and both asthma and

hay fever are present in some members of his family. He has just seen an advert for a proprietary OTC *hydrocortisone cream* and says he would prefer to buy his supplies from you in the future to save both himself and the doctor some time. The eczema affects his ankles, shins and hands; the skin on his hands is cracked and weeping.

The pharmacist's view

Mr Timpson needs to see his doctor because the eczema on his hands is infected. Topical steroids, including *hydrocortisone*, should not be used on infected skin.

The doctor's view

The description given strongly suggests widespread atopic eczema with an area of infection on his hands. Although he has had this problem for many years, it would make sense for him to be referred to the GP, especially in view of the likely infection. It would be helpful for the GP to gain an understanding of Mr Timson's ideas, concerns and expectations about his eczema and its management. It would be useful to identify any aggravating factors, e.g. pets, soaps, washing powders, working environment, stress. It would be helpful to inquire which emollients have been used and how helpful they have been. It could be useful to take a swab to confirm the infection, which most likely is due to *Staphylococcus aureus*. In this situation, a 10-day course of *flucloxacillin*, or *erythromycin* if *penicillin*-sensitive, is indicated. If he is subject to repeated infection, he could try an antiseptic bath oil and emollient. It might be appropriate for him to use a potent topical steroid, e.g. *betamethasone* 0.1% for a short period to control symptoms, rather than persisting with a weaker one in the long term. Once his symptoms are under control, he could continue with *hydrocortisone* as required plus his usual emollient.

Case 3

Romiz Miah, a young adult, asks your advice about his hands, which are sore and dry. The skin is flaky but not broken and there is no sign of secondary infection such as weeping or pus. He says the problem is spreading and now affecting his arms as well. He has occasionally had the problem before but not as severely. On further questioning, you discover he has recently started working in his family's restaurant and has been doing a lot of washing up and cleaning.

The pharmacist's view

The most likely cause is an irritant dermatitis caused by increased recent exposure to water and detergents. There are no signs of

infection and it would be reasonable to recommend treatment with *topical hydrocortisone*. The skin is dry so an ointment formulation would be helpful. Wearing rubber gloves to protect the skin would help. Regular and frequent use of an emollient will also be helpful.

The doctor's view

If his skin does not settle with the pharmacist's advice over the next week or two, it would be appropriate to suggest seeing his GP. In the consultation with the GP, it would be helpful to find out what his understanding of the problem is, how he thinks it is caused and what concerns he may have. He might, for example, think that it is caused solely by an infection and be contagious. Similarly his expectations of what can be done to help need to be explored. He might, for instance, be expecting a complete cure; some people expect oral medication rather than topical creams. Exploration of his ideas, concerns and expectations will lead to a more satisfactory outcome. He will be more likely to adhere to the advice and treatment.

In this case he might benefit from a stronger steroid cream (0.1% *betamethasone*) and a change of emollient. The most important aspect for the future would be prevention by protection from frequent contact with detergents.

Case 4

You are asked to speak to a patient on the phone about some cream she purchased at your pharmacy earlier today. The patient says she bought some *Eumovate Eczema and Dermatitis Cream* for a rash caused by a new deodorant. However, when she got home and read the patient information leaflet (PIL), she discovered that it should not be used by breastfeeding mothers without medical advice. She had her first baby 4 months ago and is breastfeeding.

The pharmacist's view

I didn't realise that the PIL for *Eumovate* said this about breastfeeding, so this phone call put me on the spot. I thought about the possible risk and decided it was very small. The treatment was only going to be used for a few days and the amount of steroid that might be absorbed through the skin would be absolutely tiny. However, I didn't want to undermine her confidence. I was also a bit worried about where I stood if I gave advice that was different from the PIL. But in the end I decided to use my own judgement. I told her that I would explain why the warning is in the leaflet, would give her my opinion and then see what she wanted to do. I said that if she would prefer it, she could use a simple soothing cream on the rash. I also said that if it was

inconvenient for her to come back to the pharmacy, I could arrange for the other cream to be delivered by our prescription delivery van.

The patient's view

I was really worried when I got home and read the leaflet. You don't expect that putting something on a rash might mean you can't breast-feed. I thought maybe something in the cream could be dangerous to my baby. The pharmacist spent time talking it through with me and in the end I decided to go for the soothing cream instead, to be on the safe side.

The doctor's view

It is highly unlikely that *Eumovate* would cause any problems for the baby, especially as the treatment is going to be very short-term. The advice given about corticosteroids and breastfeeding in the BNF states that 'maternal doses of up to 40 mg *prednisolone* daily by mouth are unlikely to cause any systemic effects in infants'. As so little of this topical moderate potency steroid is likely to be absorbed, the chances of any problems are extremely unlikely. It is probable that the warning is included in the PIL for defensive legal reasons as there is no research evidence available in this situation. The advice and opinion given by the pharmacist is helpful and should enable the patient to make a decision.

Acne

The incidence of acne in teenagers is extremely high and it has been estimated that over half of all adolescents will experience some degree of acne. Most acne sufferers resort, at least initially, to self-treatment. Mild acne often responds well to correctly used OTC treatments. Acne has profound effects on patients, and pharmacists should remember that even mild acne is seen as stigmatising for teenagers and moderate to severe acne can be a major problem and a source of depression for some. A sympathetic response to requests for help, together with an invitation to return and report progress, can be as important as the treatment selected.

What you need to know
Age
Severity
Mild, moderate, severe
Affected areas
Duration
Medication

Significance of questions and answers

Age

Acne commonly occurs during the teenage years and its onset is most common at puberty, although it may start to appear a year or so earlier. Acne can persist for anything from a few months to several years; with onset at puberty, acne may continue until the late teens or even early twenties. The hormonal changes that occur during puberty, especially the production of androgens, are thought to be involved in the causation of acne. Increased keratin and sebum production during adolescence are thought to be important contributory factors; the increased amount of keratin leads to blockages of the follicles and the formation of microcomedones. A microcomedone can develop into a non-inflammatory lesion (comedone), which may be open (blackhead) or closed (whitehead), or into an inflammatory lesion (papule, pustule or nodule). Excess sebum encourages the growth of

bacteria, particularly *Propionibacterium* acnes, which are involved in the development of inflammatory lesions. Acne can thus be non-inflammatory or inflammatory in nature.

Very young

Acne is extremely rare in young children and babies and any such cases should be referred to the doctor for investigation since an androgen-secreting (hormone-producing) tumour may be responsible.

Older

For patients in whom acne begins later than the teenage years, other causes should be considered, including drug therapy (discussed below) and occupational factors. Oils and greases used at work can precipitate acne and it would be worth asking whether the patient comes into contact with such agents. Acne worsens just before or during menstruation in some women; this is thought to be due to changes in progesterone levels.

Severity

OTC treatment may be recommended for mild acne. Comedones may be open or closed; the sebum in closed comedones cannot reach the surface of the skin. The plug of keratin, which is at the entrance to the follicle in a comedone, is initially white (a whitehead), later becoming darker-coloured because of the accumulation of melanin (a blackhead). However, sebum is still produced, so that swelling occurs and the comedone eventually ruptures, discharging its contents under the skin's surface. The released sebum causes an inflammatory response; if the response is not severe, small red papules appear. In more severe acne, angry-looking red pustules are seen and referral to the doctor for alternative forms of treatment such as topical or systemic antibiotics is needed.

Affected areas

In acne, affected areas may include the face, neck, centre of the chest, upper back and shoulders; i.e. all areas with large numbers of sebaceous glands. Rosacea is a skin condition that is sometimes confused with acne. Occurring in young and middle-aged adults, rosacea has characteristic features of reddening, papules and pustules. Only the face is affected.

Duration

The information gained here should be considered in conjunction with facts about medication (prescribed or OTC) tried already and other

medicines being taken. Acne of long duration where several OTC preparations have been correctly used without success indicates referral to the doctor.

Medication

The pharmacist should establish the identity of any treatment tried already and its method of use. Inappropriate use of medication, e.g. infrequent application, could affect the chances of success.

Information about current therapy is important, since acne can sometimes be drug-induced. *Lithium*, *phenytoin* and the progestogens, levonorgestrel and norethisterone (e.g. in the combined oral contraceptive (COC) pill), may be culprits. If acne is suspected as a result of drug therapy, patients should be advised to discuss this with their doctor.

When to refer
Severe acne
Failed medication
Suspected drug-induced acne

Treatment timescale

A patient with mild acne, which has not responded to treatment within 8 weeks, should be referred to the doctor.

Management

Dozens of products are marketed for the treatment of acne. The pharmacist can make a logical selection based on knowledge of likely efficacy. The general aims of therapy are to remove follicular plugs so that sebum is able to flow freely and to reduce the number of bacteria on the skin. Treatment should therefore reduce comedone formation. The most useful formulations are lotions, creams and gels. Gels with an alcoholic base dry quickly but can be irritating. Those with an aqueous base dry slower but are less likely to irritate the skin. A non-comedogenic moisturiser can help if the skin becomes dry as a result of treatment.

Benzoyl peroxide

Benzoyl peroxide has both antibacterial and anticomedogenic actions and is the first-line OTC treatment for inflammatory and non-inflammatory acne. Anti-inflammatory action occurs at all

strengths. Anticomedogenic action is low and has the greatest effect at higher strengths. It has a keratolytic action, which increases the turnover of skin cells, helping the skin to peel. Regular application can result in improvement of mild acne. At first, *benzoyl peroxide* is very likely to produce reddening and soreness of the skin, and patients should be warned of this (see 'Practical points' below). Treatment should start with a 2.5% or 5% product, moving gradually to the 10% strength if needed. Gels can be helpful for people with oily skin and creams for those with dry skin. Washing the skin with a mild soap or cleansing product rinsed off with water before applying *benzoyl peroxide* can help by reducing the amount of sebum on the skin.

Benzoyl peroxide prevents new lesions forming rather than shrinking existing ones. Therefore it needs to be applied to the whole of the affected area, not just to individual comedones, and is best applied to skin following washing. During the first few days of use, the skin is likely to redden and may feel slightly sore. Stinging, drying and peeling are likely. Warning should be given that such an irritant effect is likely to occur, otherwise treatment may be abandoned inappropriately.

One approach to minimise reddening and skin soreness is to begin with the lowest strength preparation and to apply the cream, lotion or gel sparingly and infrequently during the first week of treatment. Application once daily or on alternate days could be tried for a week and then frequency of use increased to twice daily. After 2 or 3 weeks, a higher strength preparation may be introduced. If irritant effects do not improve after 1 week or are severe, use of the product should be discontinued.

Sensitisation

Occasionally, sensitisation to *benzoyl peroxide* may occur. The skin becomes reddened, inflamed and sore, and treatment should be discontinued.

Bleaching

Warning should be given that *benzoyl peroxide* can bleach clothing and bedding. If it is applied at night, white sheets and pillowcases are best used and patients can be advised to wear an old T-shirt or shirt to minimise damage to good clothes. Contact between *benzoyl peroxide* and the eyes, mouth and other mucous membranes should be avoided.

Other keratolytics

Other keratolytics include *potassium hydroxyquinoline sulphate*, *sulphur*, *resorcinol* and *salicylic acid*. They are second-line treatments. *Salicylic acid* may be helpful for some patients with comedonal acne.

Potassium hydroxyquinoline sulphate also has antibacterial activity. *Sulphur* has some antiseptic activity in addition to its keratolytic effect. There seems to be evidence that *sulphur* can itself be comedogenic, i.e. it can lead to comedone formation, so it would not be considered a first-line treatment. Prolonged application of *resorcinol* can affect thyroid function, so continued use of products containing *resorcinol* is not advisable, though the relative risk in acne is probably small unless large areas of skin are involved. The use of *resorcinol* in black-skinned patients is not advisable because it may lead to skin discoloration. *Salicylic acid* has some antibacterial and antifungal actions.

Antibacterials

Skin washes and soaps containing antiseptic agents such as chlorhexidine are available. Such products can be useful in acne by degreasing the skin and reducing the skin flora.

One combination product is available containing *benzoyl peroxide* together with *miconazole*, an antifungal agent with antibacterial activity. Such a combination will unblock follicular plugs and reduce the number of bacteria on the skin.

Practical points

Information on acne for teenagers

The website www.teenagehealthfreak.com is a useful source of practical information for teenagers with health concerns including acne. As well as explaining what acne is and what can be used to treat it, site users can read other teenagers' queries about acne and Dr Ann's replies. The Acne Support Group also has a website especially for teenagers that provides tips and advice on common problems and reviews of other acne websites www.stopspots.org.

Diet

There is no evidence to link diet with acne, despite a common belief that chocolate and fatty foods cause acne or make it worse.

Sunlight

Ultraviolet (UV) light can be helpful in acne and advice can be given to spend more time in the sun. The beneficial effects of sunlight are thought to be due to its peeling effect, which helps to unblock follicles, and the drying or degreasing effect of the sun on the skin may also be valuable. The use of artificial forms of UV light such as sunbeds is not to be encouraged, since evidence suggests that the risk of melanoma is increased.

Antibiotics

The resistance of *Propionibacterium acnes* to antibiotics is increasing. The pharmacist is in a good position to ensure that acne treatments are used correctly. Oral antibiotic therapy usually consists of tetracyclines (*minocycline* is more commonly used as there is less resistance, better absorption and it only needs a dose once daily) and patients should be reminded not to eat or drink dairy products up to 1 h before or after taking the antibiotic. The same rule applies to antacid or iron preparations. Evidence suggests that failure of antibiotic therapy in acne in the past may have been due to subclinical levels of antibiotic because of chelation by metal ions in dairy products or antacids. Other antibiotics used orally include *erythromycin* and *trimethoprim*. Bacterial resistance to *erythromycin* is now high so it may not be effective. *Trimethroprim* is sometimes used when acne is resistant to other bacterials, although it is an unlicensed indication.

Topical antibiotics are used as an alternative to oral antibiotics but are not as effective. They are useful in inflammatory acne. Topical *erythromycin* combined with *benzoyl peroxide* or *zinc* may induce less bacterial resistance than oral therapy alone.

Continuous treatment

Acne is notoriously slow to respond to treatment and a period of up to 6 months may be required for maximum benefit. It is generally agreed that keratolytics such as *benzoyl peroxide* require a minimum of 6–8 weeks' treatment for benefit to be shown. Patients should therefore be encouraged to persevere with treatment, whether with OTC or prescription products, and told not to feel discouraged if results are not immediate. Research has shown that many teenagers have unrealistic expectations of the time needed for improvement to be seen, perhaps created by the advertising for some treatments. The patient also needs to understand that acne is a chronic condition and that continuous treatment is needed to keep the problem under control.

Skin hygiene

Acne is not caused by poor hygiene or by failure to wash the skin sufficiently often. However, regular washing of the skin with soap and warm water, or preferably with an antibacterial soap or skin wash, can be helpful as it degreases the skin and reduces the number of bacteria present.

Facial washes and soap substitutes can sometimes help to motivate patients to wash regularly. Since personal hygiene is a sensitive area, an initial inquiry about the kind of soap or wash currently being used might be a tactful way to introduce the subject. Dermabrasion with

facial scrubs removes the outer layer of dead skin and must be done gently. The patient needs to understand that scrubbing harshly will not produce an improved effect. There is no evidence of effectiveness of this approach in acne.

Topical hydrocortisone and acne

The use of *topical hydrocortisone* is contraindicated in acne because steroids can potentiate the effects of androgenic hormones on the sebaceous glands, hence making acne worse.

Make-up

Heavy, greasy make-up can only exacerbate acne. If make-up is to be worn, water-based rather than oily foundations are best, and they should be removed thoroughly at the end of the day.

Athlete's foot

The incidence of athlete's foot (tinea pedis) is not, as its name might suggest, limited to those of an athletic disposition. The fungus that causes the disease thrives in warm, moist conditions. The spaces between the toes can provide a good growth environment and the infection therefore has a high incidence. The problem is more common in men than in women and responds well to OTC treatment.

What you need to know
Duration
Appearance
Severity
Broken skin
Soreness
Secondary infection
Location
Previous history
Medication

Significance of questions and answers

Duration

Considered together with its severity, a long-standing condition may make the pharmacist decide to refer the patient. However, most cases of athlete's foot are minor in nature and can be treated effectively with OTC products.

Appearance

Athlete's foot usually presents as itchy, flaky skin in the web spaces between the toes. The flakes or scales of skin become white and macerated and begin to peel off. Underneath the scales, the skin is usually reddened and may be itchy and sore. The skin may be dry and scaly or moist and weeping.

Severity

Athlete's foot is usually a mild fungal infection, but occasionally the skin between the toes becomes more macerated and broken and deeper and painful fissures may develop. The skin may then become inflamed and sore. Once the skin is broken, there is the potential for secondary bacterial infection to develop. If there are indications of bacterial involvement such as weeping, pus or yellow crusts, then referral to the doctor is needed.

Location

Classically the toes are involved, the web space between the fourth and fifth toes being the most commonly affected. More severe infections may spread to the sole of the foot and even to the upper surface in some cases. This type of spread can alter the appearance of the condition and severe cases are probably best referred to the doctor for further investigation. When other areas of the foot are involved, the appearance can be confused with that of allergic dermatitis. However, in eczema or dermatitis, the spaces between the toes are usually spared, in contrast to athlete's foot.

If the toenails appear to be involved, referral to the doctor will be necessary because systemic antifungal treatment may be required to deal with infection of the nail bed. Even with systemic treatment it is not always possible to eradicate such infections.

Previous history

Many people suffer occasionally from athlete's foot. The pharmacist should ask about previous bouts and about the action taken in response. Any diabetic patient who presents with athlete's foot is best referred to the doctor. Diabetics may have impaired circulation or innervation of the feet and are more prone to secondary infections in addition to poorer healing of open wounds.

Medication

One or more topical treatments may have been tried before the patient seeks advice from the pharmacist. The identity of any treatment and the method of use should be established. Treatment failure may occur simply because it was not continued for sufficiently long enough. However, if an appropriate antifungal product has been used correctly without remission of symptoms, the patient is best referred to the doctor, especially if the problem is of long duration (several weeks).

When to refer
Severe, affecting other parts of the foot
Signs of bacterial infection
Unresponsive to appropriate treatment
Diabetic patients
Involvement of toenails

Treatment timescale

If athlete's foot has not responded to treatment within 2 weeks, patients should see their doctor.

Management

Many preparations are available for the treatment of athlete's foot. Formulations include creams, powders, solutions, sprays and paints. A systematic review of clinical evidence compared topical allylamines (e.g. *terbinafine*), azoles (e.g. *clotrimazole*, *miconazole*, *ketoconazole*), *undecenoic acid* and *tolnaftate*. All are more effective than placebo. Topical allylamines have been tested against topical azoles; cure rates were the same. However, *terbinafine* was more effective in preventing recurrence. *Terbinafine* and *ketoconazole* have a 1-week treatment period, which some patients may prefer.

Pharmacists should instruct patients on how to use the treatment correctly and on other measures that can help to prevent recurrence (see 'Practical points' below). Regular application of the recommended product to clean, dry feet is essential and treatment must be continued after symptoms have gone to ensure eradication of the fungus. A minimum of 2–4 weeks' treatment is usually needed.

Azoles (e.g. clotrimazole, ketoconazole, miconazole)

Topical azoles can be used to treat many topical fungal infections, including athlete's foot. They have a wide spectrum of action and have been shown to have both antifungal and antibacterial activity (the latter is useful as secondary infection can occur). The treatment should be applied two or three times daily. Formulations include creams, powders and sprays. *Miconazole*, *clotrimazole* and *ketoconazole* have occasionally been reported to cause mild irritation of the skin. *Ketoconazole* has a 1-week treatment period.

Terbinafine

Terbinafine is available as cream and spray formulations. The cream is licensed for treatment of athlete's foot and 'dhobie itch' (jock itch).

The latter might be described by the patient as a rash affecting the groin, known as jock itch in the USA. The spray is licensed for treatment of athlete's foot, dhobie itch and ringworm. *Terbinafine cream* is applied once or twice daily for 1 week in athlete's foot and for 1–2 weeks in dhobie itch. *Terbinafine spray* is used for 1 week in all indications. There is evidence that *terbinafine* is better than the azoles in preventing recurrence, so it will be useful where frequent bouts of athlete's foot are a problem. *Terbinafine* can cause redness, itching and stinging of the skin; contact with the eyes should be avoided. This is not recommended for use in children (the spray is not to be used in children under 16).

Tolnaftate

Tolnaftate is available in powder, cream, aerosol and solution formulations and is effective against athlete's foot. It has antifungal but not antibacterial action. It should be applied twice daily and treatment should be continued for up to 6 weeks. *Tolnaftate* may sting slightly when applied to infected skin.

Undecenoates (e.g. zinc undecenoate, undecenoic acid, methyl and propyl undecylenate)

Undecenoic acid is an antifungal agent, sometimes formulated with zinc salt to give additional astringent properties. Treatment should be continued for 4 weeks.

Hydrocortisone cream or ointment

Hydrocortisone may be sold OTC for allergic and irritant dermatitis, insect bites or stings, and mild to moderate eczema. The pharmacist may not recommend the use of *topical hydrocortisone* in athlete's foot because, although it would reduce inflammation, it would not deal with the fungal infection, which might then worsen. Combination products containing *hydrocortisone* together with an antifungal agent are, however, available OTC for use in athlete's foot and intertrigo (described as 'sweat rash' on product packaging and information). Treatment is limited to 7 days.

Practical points

Footwear

Sweating of the feet can produce the kind of hot, moist environment in which the fungus is able to grow. Shoes that are too tight and that are made of synthetic materials make it impossible for moisture to evaporate. If possible, the patient should wear leather shoes, which will allow the skin to breathe. In summer, open-toed sandals can be

helpful, and shoes should be left off where possible. The wearing of cotton socks can facilitate the evaporation of moisture, whereas nylon socks will prevent this.

Foot hygiene

The feet should be washed and carefully and thoroughly dried, especially between the toes, before the antifungal preparation is applied.

Transmission of athlete's foot

Athlete's foot is easily transmitted and is thought to be acquired by walking barefoot, e.g. on changing-room floors in workplaces, schools and sports clubs. The wearing of some form of footwear such as rubber sandals can therefore be useful.

Prevention of reinfection

Care should be taken to ensure that shoes and socks are kept free of fungus. Socks should be changed and washed regularly. Shoes can be dusted with a fungicidal powder to eradicate the fungus. The use of a fungicidal dusting powder on the feet and in the shoes can be a useful prophylactic measure and can also help to absorb moisture and prevent maceration. Patients should be reminded to treat all shoes, since fungal spores may be present.

Frequency and length of treatment

Products should be applied to clean, dry feet twice daily, in the morning and in the evening. *Terbinafine* and *ketoconazole* are used for 1 week, and other treatments for longer and as stated on the product packaging. For *clotrimazole* and *miconazole*, treatment should be continued for the period stated on the product packaging (usually 2 weeks after the symptoms of athlete's foot have disappeared), to ensure that the infection is eradicated. A total treatment time of 2–4 weeks might normally be expected for *miconazole* and *clotrimazole*. If the condition has not improved after 2 weeks, referral to the doctor is advisable.

Ringworm

Ringworm of the body (tinea corporis) is a fungal infection, which occurs as a circular lesion that gradually spreads after beginning as a small, red, papule. Often there is only one lesion and the characteristic appearance is of a central, cleared area with a red advancing edge. Topical azoles such as *miconazole* are effective treatments for ringworm.

Ringworm of the groin (tinea cruris) presents as an itchy red area in the genital region and often spreads to the inside of the thighs. The problem is more common in men than in women and is commonly known as jock itch in the USA. Treatment consists of topical antifungals; the use of powder formulations can be particularly valuable because they absorb perspiration.

Fungal infections in practice

Case 1

John Chen, the local plumber, is in his early twenties and captains the local football team on Sunday mornings. Today he wants to buy something for his athlete's foot, which he just can't get rid of. His girlfriend bought him some cream a few days ago but it doesn't seem to be having any effect. The skin between the third and fourth toes and between the second and third toes is affected. John tells you the skin is itchy and that it looks flaky. He tells you that he has had athlete's foot before and that it keeps coming back again. He wears trainers most of the time (he has them on now) and has used the cream his girlfriend bought on most days.

The pharmacist's view

From the answers he has given, it sounds as though John has athlete's foot. Once you have ascertained the identity of the cream he has been using, it might be appropriate to suggest the use of one of the azoles or *terbinafine*. Advice is also needed about foot hygiene and footwear and about regular use of treatment. If the problem has not cleared up after 2 weeks, John should see his doctor.

The doctor's view

With the correct advice from the pharmacist his problem should clear up. It sounds as if he expected the cream bought by his girlfriend to have been a rapid cure, and it would be worthwhile explaining that with such infections he will have to persevere with treatment for much longer. A change in the type of footwear is also likely to be helpful.

Case 2

Linda Green asks if you can recommend anything for athlete's foot. She tells you that it affects her toes and the soles and top of her feet, and is extremely itchy. When asked about the skin between her toes, she tells you she does not think the rash is between the toes. She says the skin is dry and red and has been like this for several days. Ms Green has not tried any medication to treat it.

The pharmacist's view

The symptoms that Linda Green has described do not sound like those of athlete's foot. The skin between the toes is not affected, so dermatitis is a possibility. Rather than recommend a product without being able to identify the cause of the problem, it would be better to refer Ms Green to her doctor.

The doctor's view

The description that the pharmacist has obtained does not sound like athlete's foot, which usually involves the cleft between the fourth and fifth toes. Referral to the doctor for diagnosis would be sensible. It is possible she may have pompholyx and/or eczema. It would be helpful to know if she suffers, or has suffered, from any skin problems elsewhere on the body, e.g. psoriasis or eczema.

Cold sores

Cold sores (herpes labialis) are caused by one of the most common viruses affecting humans worldwide. The virus responsible is the herpes simplex virus (HSV) of which there are two major types: HSV1 and HSV2. HSV1 typically causes infection around or in the mouth whereas HSV2 is responsible for genital herpes infection. Occasionally, however, this situation is reversed with HSV2 affecting the face and HSV1 the genital area.

What you need to know
Age
Duration
Symptoms and appearance
Tingling
Pain
Location (current and previous)
Precipitating factors
Sunlight
Infection
Stress
Previous history
Medication

Significance of questions and answers

Age

Although initial infection, which is usually subclinical and goes unnoticed, occurs in childhood, cold sores are most commonly seen in adolescents and young adults. Following the primary attack, the virus is not completely eradicated and virus particles lie dormant in nerve roots until they are reactivated at a later stage. Although herpes infection is almost universal in childhood, not all those affected later experience cold sores, and the reason for this is not fully understood. Recurrent cold sores occur in up to 25% of all adults and the frequency declines with age, although cold sores occur in patients of all

ages. The incidence of cold sores is slightly higher in women than in men.

In active primary herpes infection of childhood, the typical picture is of a febrile child with a painful ulcerated mouth and enlarged lymph nodes. The herpetic lesions last for 3–6 days and can involve the outer skin surface as well as the inside of the mouth. Such patients should be referred to the doctor.

Duration

The duration of the symptoms is important as treatment with *aciclovir* (*acyclovir*) is of most value if started early in the course of the infection (during the prodromal phase). Usually the infection is resolved within 1–2 weeks. Any lesions that have persisted longer need medical referral.

Symptoms and appearance

The symptoms of discomfort, tingling or irritation (prodromal phase) may occur in the skin for 6–24 h before the appearance of the cold sore. The cold sore starts with the development of minute blisters on top of inflamed, red, raised skin. The blisters may be filled with white matter. They quickly break down to produce a raw area with exudation and crusting by about the fourth day after their appearance. By around 1 week later, most lesions will have healed.

Cold sores are extremely painful and this is one of the critical diagnostic factors. Oral cancer can sometimes present a similar appearance to a cold sore. However, cancerous lesions are often painless and their long duration differentiates them from cold sores.

When a cold sore occurs for the first time, it can be confused with a small patch of impetigo. Impetigo is usually more widespread, does not start with blisters and has a honey-coloured crust. Impetigo tends to spread out to form further patches and does not necessarily start close to the lips. It is less common than cold sores and tends to affect children. Since impetigo requires either topical or oral antibiotic treatment, the condition cannot be treated by the pharmacist. If there is any doubt about the cause of the symptoms, the patient should be referred.

Location

Cold sores occur most often on the lips or face. Lesions inside the mouth or affecting the eye need medical referral.

Precipitating factors

It is known that cold sores can be precipitated by sunlight, wind, fever (during infections such as colds and flu), and menstruation, being rundown and local trauma to the skin. Physical and emotional stress can also be triggers. Whilst it is often not possible to avoid these factors completely, the information is usually helpful for the sufferer.

Previous history

The fact that the cold sore is recurrent is helpful diagnostically. If a sore keeps on returning in the same place in a similar way, then it is likely to be a cold sore. Most sufferers experience one to three attacks each year. Cold sores occur throughout the year, with a slightly increased incidence during the winter months. Information about the frequency and severity of the cold sore is helpful when recommending referral to the doctor, although the condition can usually be treated by the pharmacist.

In patients with atopic eczema, herpes infections can be severe and widespread. Such patients must be referred to their doctor.

Medication

It is helpful to enquire what creams and lotions have been used so far, what was used in previous episodes and what, if anything, helped last time.

Immunocompromised patients, e.g. those undergoing cytotoxic chemotherapy, are at risk of serious infection and should always be referred to their doctor.

When to refer
Babies and young children
Failure of an established sore to resolve
Severe or worsening sore
History of frequent cold sores
Sore lasting longer than 2 weeks
Painless sore
Patients with atopic eczema
Eye affected
Uncertain diagnosis
Immunocompromised patient

Management

Aciclovir

Aciclovir cream is an antiviral that reduces time to healing and reduces pain experienced from the lesion. Treatment should be started as soon as symptoms are felt and before the lesion appears. Once the lesion has appeared, evidence of effectiveness is less convincing. *Aciclovir* is therefore a helpful recommendation for patients who suffer repeated attacks and know when a cold sore is going to appear. Such patients can be told that they should use treatment as soon as they feel the characteristic tingling or itching which precedes the appearance of a cold sore.

Aciclovir cream should be applied five times a day to the affected area. If healing is not complete, treatment can be continued for up to 5 more days, after which medical advice should be sought if the cold sore has not resolved. Some patients experience a transient stinging sensation after applying the cream. The affected skin may become dry and flaky in some cases.

Antiseptics

If the cold sore is well established, an antibacterial topical treatment could be of some value in preventing a secondary infection, but there is no definitive evidence of effectiveness in reducing time for the cold sore to heal or reducing pain and discomfort. *Povidone-iodine* 10% in an alcoholic solution (antiseptic paint) also has an antiviral action and its alcoholic base helps to dry the sore. Other skin disinfection solutions such as *benzalkonium chloride* or *cetrimide* could also be used. *Povidone-iodine* should be avoided during pregnancy and when breastfeeding. It is important to enquire whether or not there is a history of iodine sensitivity. Both *benzalkonium chloride* and *cetrimide* should be kept clear of contact with the eyes.

Bland creams

Keeping the cold sore moist will prevent drying and cracking, which might predispose to secondary bacterial infection. For the patient who suffers only an occasional cold sore, a simple cream, perhaps containing an antiseptic agent, can help to reduce discomfort.

Complementary therapies

Balm mint extract and tea tree oil applied topically may have an effect on pain, dryness and itching. There is insufficient evidence to assess whether they have an effect on healing, time to crusting, severity of an attack or rate of recurrence. Narrow-waveband light within the infra-

red spectrum may have an effect on cold sores, although there is insufficient evidence currently.

Practical points

Preventing cross-infection

Patients should be aware that HSV1 is contagious and transmitted by direct contact. Tell patients to wash their hands after applying treatment to the cold sore. Women should be careful in applying eye make-up when they have a cold sore to prevent infection affecting the eye. It is sensible not to share cutlery, towels, toothbrushes or face flannels until the cold sore has cleared up. Oral sex with someone who has a cold sore means a risk of genital herpes and should be avoided until the cold sore has gone.

Use of sunscreens

Sunscreen creams applied to and around the lips when patients are subject to increased sun exposure (e.g. during skiing and beach holidays) can be a useful preventive measure.

Stress

Sources of stress in life could be looked at to see if changes are possible. It might be worthwhile recommending a discussion with the doctor about this.

Eczema herpeticum (Kaposi's varicelliform eruption)

Patients with atopic eczema are very susceptible to herpetic infection and show an abnormal response to the virus with widespread lesions and sometimes involvement of the CNS. These patients should avoid contact with anyone who has an active cold sore.

Warts and verrucae

Warts and verrucae are caused by a viral infection of the skin and have a high incidence in schoolchildren. Once immunity to the infecting virus is sufficiently high, the lesions will disappear, but many patients and parents prefer active treatment for cosmetic reasons. Effective preparations are available OTC, but correct use is essential if damage to surrounding skin is to be minimised.

What you need to know
Age
Adult, child
Appearance and number of lesions
Location
Duration and history
Medication

Significance of questions and answers

Age

Warts can occur in children and adults; they are more common in children and the peak incidence is found between the ages of 12 and 16. The peak incidence is thought to be due to higher exposure to the virus in schools and sports facilities. Warts and verrucae are both caused by the human papilloma virus, differing in their location.

Appearance

Warts appear as raised lesions with a roughened surface that are usually flesh-coloured. Plantar warts occur on the weight-bearing areas of the sole and heel (verrucae). They have a different appearance from warts elsewhere on the body because the pressure from the body's weight pushes the lesion inwards, eventually producing pain when weight is applied during walking. Warts have a network of capillaries and, if pared, thrombosed, blackened capillaries or bleeding points will be seen. The presence of these capillaries provides a useful distinguishing feature between callouses and verrucae on the feet: if a corn or callous is pared, no such dark points will be seen;

instead layers of white keratin will be present. The thrombosed capillaries are sometimes thought, incorrectly, to be the root of the verruca by the patient. The pharmacist can correct this misconception when explaining the purpose and method of treatment (discussed below).

Multiple warts

Warts may occur singly or as several lesions. Molluscum contagiosum is a condition in which the lesions may resemble warts and where another type of viral infection is the cause. Closer examination shows that the lesions contain a central plug of material (consisting of viral particles), which can be removed by squeezing. The location of molluscum contagiosum tends to differ from that of warts – the eyelids, face, armpits and trunk may be involved. Such cases are best referred to the doctor, since self-treatment would be inappropriate.

Location

The palms or backs of the hands are common sites for warts, as is the area around the fingernails. People who bite or pick their nails are more susceptible to warts around them. Warts sometimes occur on the face and referral to the doctor is the best option in such cases. Since treatment with OTC products is destructive in nature, self-treatment of facial warts can lead to scarring and should never be attempted.

Parts of the skin that are subject to regular trauma or friction are more likely to be affected, since damage to the skin facilitates entry of the virus. Plantar warts (verrucae) are found on the sole of the foot and may be present singly or as several lesions.

Anogenital

Anogenital warts are caused by a different type of human papilloma virus and require medical referral for examination, diagnosis and treatment. They are sexually transmitted and patients can self-refer to their local genitourinary clinic.

Duration and history

It is known that most warts will disappear spontaneously within a period of 6 months to 2 years. The younger the patient, the more quickly the lesions are likely to remit.

Any change in the appearance of a wart should be treated with suspicion and referral to the doctor is advised. Skin cancers are sometimes mistakenly thought to be warts by patients, and the pharmacist can establish how long the lesion has been present and any changes that have occurred. Signs related to skin cancer are described in 'Practical points' below.

Medication

Diabetic patients should not use OTC products to treat warts or verrucae since impaired circulation can lead to delayed healing, ulceration or even gangrene. Peripheral neuropathy may mean that even extensive damage to the skin may not provoke a sensation of pain.

Warts can be a major problem if the immune system is suppressed by either disease (e.g. HIV infection; lymphoma) or drugs (e.g. ciclosporin (cyclosporin) to prevent rejection of a transplant).

The pharmacist should ask whether any treatment has been attempted already and if so, its identity and the method of use. Commonly, treatments are not used for a sufficiently long period of time because patients' expectations are often of a fast cure.

When to refer
Changed appearance of lesions: size, colour
Bleeding
Itching
Genital warts
Facial warts
Immunocompromised patients

Treatment timescale

Treatment with OTC preparations should produce a successful outcome within 3 months; if not, referral is necessary.

Management

Treatment of warts and verrucae aims to reduce the size of the lesion by gradual destruction of the skin. Continuous application of the selected preparation for several weeks or months may be needed and it is important to explain this to the patient if compliance with treatment is to be achieved. Surrounding healthy skin should be protected during treatment (see 'Practical points' below).

Salicylic acid

Salicylic acid may be considered to be the treatment of choice for warts; it acts by softening and destroying the skin, thus mechanically removing infected tissue. Preparations are available in a variety of strengths, sometimes in collodion-type bases that help to retain the *salicylic acid* in contact with the wart. *Lactic acid* is included in some

preparations with the aim of enhancing availability of the *salicylic acid*. It is a keratolytic and has an antimicrobial effect. Ointments, gels and plasters containing *salicylic acid* provide a selection of methods of application. Preparations should be kept well away from the eyes and applied with an orange stick or other applicator, not with the fingers.

Formaldehyde

Formaldehyde is used for the treatment of verrucae; it is considered to be less suitable for warts on the hands because of its irritant effect on the skin. The thicker skin layer on the sole of the feet protects against this irritant action. A gel formulation is available for the treatment of verrucae and is applied twice a day. Both *formaldehyde* and *glutaraldehyde* have an unpredictable action and are not first-line treatments for warts, though they may be useful in resistant cases.

Glutaraldehyde

Glutaraldehyde is used in a 5% or 10% gel or solution to treat warts; it is not used for anogenital warts and is generally used for verrucae. Its effect on viruses is variable. Patients should be warned that *glutaraldehyde* will stain the skin brown, although this will fade after treatment has stopped.

Practical points

Application of treatments

Treatments containing *salicylic acid* should be applied daily. The treatment is helped by prior soaking of the affected hand or foot in warm water for 5–10 min to soften and hydrate the skin, increasing the action of the *salicylic acid*. Removal of dead skin from the surface of the wart by gentle rubbing with a pumice stone or emery board ensures that the next application reaches the surface of the lesion. Occlusion of the wart using an adhesive plaster helps to keep the skin macerated, maximising the effectiveness of *salicylic acid*.

Protection of the surrounding skin is important and can be achieved by applying a layer of petroleum jelly to prevent the treatment from making contact with healthy skin. Application of the liquid or gel using an orange stick will help to confine the substance to the lesion itself.

Warts and skin cancer

Premalignant and malignant lesions can sometimes be thought to be warts by the patient. There are different types of skin cancer. They can be divided into two categories: non-pigmented (i.e. skin-coloured) and pigmented (i.e. brown).

Non-pigmented. In this group, which is more likely to occur in the elderly, the signs might include a persisting small ulcer or sore that slowly enlarges but never seems to heal. Sometimes a crust forms but when it falls off, the lesion is still present. In the case of a basal cell carcinoma (rodent ulcer), the lesion typically has a circular, raised and rolled edge.

Pigmented. Pigmented lesions or moles can turn malignant. These can occur in patients of a much younger age than the first group. Changes in nature or appearance of pigmented skin lesions that warrant referral for further investigation include:

increase in size
irregular outline (surface and edge)
colour change, especially to black
itching or bleeding
satellite lesions (near main lesion)

Length of treatment required

Several weeks' continuous treatment is usually needed up to 3 months for both warts and verrucae. Patients need to know that a long period of treatment will be required and that they should not expect instant or rapid success. An invitation to come back to see the pharmacist and report progress can help the pharmacist to monitor the treatment. If treatment has not been successful after 3 months, referral for removal using liquid nitrogen may be required.

Verrucae and swimming pools

Viruses are able to penetrate moist skin more easily than dry skin, and it has been suggested that the high level of use of swimming pools has contributed to the high incidence of verrucae. Theoretically, walking barefoot on abrasive surfaces by the pool or changing area can lead to infected material from the verruca being rubbed into the flooring. There has been controversy about whether wearing rubber socks can protect against the spread of verrucae. Also, the wearing of this conspicuous article might in itself create stigma for the child involved.

Scabies

Infestation by the scabies mite, *Sarcoptes scabei*, causes a characteristically intense itching, which is worse during the night. The itch of scabies can be severe and scratching can lead to changes in the appearance of the skin. It is therefore necessary to take a careful history. Scabies goes through peaks and troughs of prevalence, with a peak occurring every 15–20 years, and pharmacists need to be aware when a peak is occurring.

What you need to know
Age
Infant, child, adult
Symptoms
Itching, rash
Presence of burrows
History
Signs of infection
Medication

Significance of questions and answers

Age

Scabies infestation can occur at any age from infancy onwards. The pharmacist may feel it best to refer infants and young children to the doctor if scabies is suspected.

Symptoms

The scabies mite burrows down into the skin and lives under the surface. The presence of the mites sets up an allergic reaction, thought to be due to the insect's coat and exudates, resulting in intense itching. A characteristic feature of scabies is that itching is worse at night and can lead to loss of sleep.

Burrows can sometimes be seen as small thread-like grey lines. The lines are raised, wavy and about 5–10 mm long. Commonly infested sites include the web space of the fingers and toes, wrists, armpits, buttocks and genital area. Patients may have a rash that does not

always correspond to the areas of infestation. The rash may be patchy and diffuse or dense and erythematous. It is more commonly found around the midriff, underarms, buttocks, inside the thighs and around the ankles.

In adults, scabies rarely affects the scalp and face, but in children aged 2 or under and in the elderly, involvement of the head is more common, especially the postauricular fold.

Burrows may be indistinct or may have been disguised by scratching which has broken and excoriated the skin. Scabies can mimic other skin conditions and may not present with the classic features. The itch tends to be generalised rather than in specific areas. In immunocompromised or debilitated patients (e.g. the elderly), scabies presents differently. The affected skin can become thickened and crusted. Mites survive under the crust and any sections that become dislodged are infectious to others because of the living mites they contain.

History

The itch of scabies can take several (6–8) weeks to develop in someone who has not been infested previously. The scabies mite is transmitted by close personal contact, so patients can be asked whether anyone else they know is affected by the same symptoms, e.g. other family members, boyfriends and girlfriends.

Signs of infection

Scratching can lead to excoriation, so that secondary infections such as impetigo can occur. The presence of a weeping yellow discharge or yellow crusts would be indications for referral to the doctor for treatment.

Medication

It is important for the pharmacist to establish whether any treatment has been tried already and, if so, its identity. The patient should be asked about how any treatment has been used, since incorrect use can result in treatment failure. The itch of scabies may continue for several days or even weeks after successful treatment, so the fact that itching has not subsided does not necessarily mean that treatment has been unsuccessful.

When to refer
Babies and children
Infected skin
Treatment failure
Unclear diagnosis

Management

There is relatively little evidence from randomised controlled trials (RCTs) of scabies treatment. *Permethrin cream* is an effective scabicide (acaricide) and *malathion* can be used where *permethrin* is not suitable. Two treatments are recommended, 7 days apart. Aqueous lotions are used in preference to alcoholic versions because the latter sting and irritate excoriated skin. *Benzyl benzoate* application is less effective than *permethrin* and *malathion* and is rarely used these days because of its particularly irritant effect. Medical supervision is required for the treatment of scabies in children under 2.

The treatment is applied to the entire body, from the neck downwards but not the neck, face and scalp in adults. However, in children under 2 and the elderly, the advice now is to include the scalp, neck, face (avoiding eyes and mouth) and ears in the application unless the product packaging contraindicates this. This recommendation is because treatment failure has occurred as the head, neck and scalp were not treated.

Patients are sometimes unsure about how to apply the preparation they have been told to use. If it is a lotion, they should pour the preparation into a bowl, then apply it to cool, dry skin using a clean, broad paintbrush, cotton wool or a shaving brush. Patients should be told to apply the preparation to the whole body, not just to the areas where burrows have been found. Particular attention should be paid to the webs of fingers, toes and soles of the feet, and to brushing lotion under the ends of the fingernails and toenails. Traditionally, patients have been told to have a hot bath before applying the scabicide but this is no longer recommended (see below).

Malathion

Malathion is effective for the treatment of scabies and pediculosis (head lice). For one application in an adult, 100 ml of lotion should be sufficient. The aqueous lotion should be used in scabies. The lotion is applied to the whole body omitting the head and neck. The lotion should be left on for 24 h, without bathing, after which it is washed off. If the hands are washed with soap and water during the

24 h, *malathion* should be reapplied to the hands. Skin irritation may sometimes occur. Medical supervision is needed for children under 6 months.

Permethrin

The cream formulation is used in the treatment of scabies. For a single application in an adult, 30–60 g of cream (one to two 30 g tubes) is needed. The cream is applied to the whole body and left on for 8–12 h before being washed off. If the hands are washed with soap and water within 8 h of application, cream should be reapplied to the hands. *Permethrin* can be used for children aged 2 months upwards; medical supervision is required for its use in children under 2 and in elderly patients (aged 70 and over). *Permethrin* can itself cause itching and reddening of the skin.

Benzyl benzoate

This preparation is a 25% strength application, which is used solely in the treatment of scabies. The cure rate from studies is about 50% but resistance is common.

Irritant nature

Benzyl benzoate itself is irritant in nature and can cause stinging, itching and burning of the skin as well as skin rashes in about 25% of people treated. For this reason, it is not recommended for babies or children and should not be used for patients with eczema or scratched and broken skin, in whom severe stinging may occur.

Application

The preparation should be applied to the whole body except the head and neck and left to dry on the skin. A second application should be made the next day, without bathing or washing off the first application. The second application is washed off 24 h later. *Benzyl benzoate* is extremely irritant to the eyes and mucous membranes; it should be kept well away from the eyes.

Practical points

1 The itch will continue and may become worse in the first few days after treatment. The reason for this is thought to be the release of allergen from dead mites. Patients need to be told that the itch will not stop straightaway after treatment. *Crotamiton cream* or lotion could be used to relieve the symptoms providing the skin is not badly excoriated. An oral antihistamine such as *promethazine* may be considered if the itch is severe.

2 Good advice would be to apply the treatment immediately before bedtime (leaving time for it to dry). Because the hands are likely to be affected by scabies, it is important not to wash the hands after application of the treatment and to reapply the preparation if the hands are washed within the treatment period.
3 The treatment should be applied to cool, dry skin. Patients with scabies were traditionally advised to have a hot bath before applying their treatment. The theory was that a hot bath would open up the mites' burrows, making it easier for the scabicide to reach the mites. This advice is no longer recommended: there is no evidence that a hot bath increases the effectiveness of scabicides but there is a real possibility that increased absorption of the scabicide could occur through warm, hydrated skin, removing the active substance from its site of action on the skin's surface.
4 All members of the family or household should be treated, preferably on the same day. Because the itch of scabies may take several weeks to develop, people may be infested but symptomless. It is thought that patients may not develop symptoms for up to 8 weeks after infestation. The incubation period of the scabies mite is 3 weeks, so reinfestation may occur from other family or household members.
5 The scabies mite can only live for around 1 day after leaving its host and transmission is almost always caused by close personal contact. It is unlikely that infestation would occur from bedclothes or clothing. After treatment for scabies, bedclothes and clothing should be washed, but there is no need for disinfection.
6 Other possible infestations include those caused by pet fleas and bedbugs. Pet fleas are common and patients may present with small, reddened swellings, often on the lower legs and around the ankles where the pet has come into contact with the skin. Questioning may reveal that a pet cat or dog has recently been acquired or that a pet has not been treated with insecticide for some time. Regular checks for fleas and use of insecticides will prevent the problem occurring in the future. A range of proprietary products is available to treat either the pet or bedding and carpets. A second treatment should be applied 2 weeks after the first to eradicate any fleas that have hatched since the first application. Pet flea bites can be treated with topical *hydrocortisone* in anyone over 10. Alternatively, an antipruritic such as *crotamiton* (with or without *hydrocortisone*) or *aqueous calamine cream* can be recommended.

Dandruff

Dandruff is a chronic relapsing condition of the scalp, which responds to treatment but returns when treatment is stopped. The condition usually appears during puberty and reaches a peak in early adulthood. Dandruff has been estimated to affect one in two people aged between 20 and 30 and up to four in 10 of those aged between 30 and 40. Dandruff is considered to be a mild form of seborrhoeic dermatitis, associated with the yeast *Malassezia furfur*. Diagnosis is straightforward and effective treatments are available OTC.

What you need to know
Appearance
Presence of scales
Colour and texture of scales
Location: scalp; eyebrows; paranasal clefts; others
Severity
Previous history
Psoriasis
Seborrhoeic dermatitis
Aggravating factors
Medication

Significance of questions and answers

Appearance

Dandruff is characterised by greyish-white flakes or scales on the scalp and an itchy scalp as a result of excessive scaling. In dandruff the epidermal cell turnover is at twice the rate of those without the condition. A differential diagnosis for severe dandruff could be psoriasis. In the latter conditions, both the appearance and location would be different. In more severe cases of seborrhoeic dermatitis the scales are yellowish and greasy looking and there is usually some inflammation with reddening and crusting of the affected skin. In psoriasis the scales are silvery-white and associated with red, patchy plaques and inflammation.

Location

In dandruff the scalp is the only area affected. More widespread seborrhoeic dermatitis affects the areas where there is greatest sebaceous gland activity, so it can affect eyebrows, eyelashes, moustache, paranasal clefts, behind the ears, nape of neck, forehead and chest.

In infants seborrhoeic dermatitis is common and occurs as cradle cap, appearing in the first 12 weeks of life.

Psoriasis can affect the scalp but other areas are involved. The knees and elbows are commonly involved but the face is rarely affected. This latter point distinguishes psoriasis from seborrhoeic dermatitis, where the face is often affected.

Severity

Dandruff is generally a mild condition. However, the itching scalp may lead to scratching, which may break the skin, causing soreness and the possibility of infection. If the scalp is very sore or there are signs of infection (crusting or weeping), referral should be indicated.

Previous history

Since dandruff is a chronic relapsing condition there will usually be a previous history of fluctuating symptoms. There is a seasonal variation in symptoms, which generally improve in summer in response to UVB light. *Malassezia furfur* is unaffected by UVA light.

Aggravating factors

Hair dyes and perms can irritate the scalp. Inadequate rinsing after shampooing the hair can leave traces of shampoo causing irritation and itching.

Psoriasis can be exacerbated by drugs (e.g. *chloroquine*).

Medication

Various treatments may already have been tried. It is important to identify what has been tried and how it was used. Dandruff treatments need to be applied to the scalp and to be left for at least 5 min for best effect. However, if an appropriate treatment has been correctly used with no improvement, referral should be considered.

When to refer
Suspected psoriasis
Signs of infection
Unresponsive to appropriate treatment

Treatment timescale

Dandruff should start to improve within 12 weeks of beginning treatment.

Management

The aim of treatment is to reduce the level of *Malassezia furfur* on the scalp; therefore agents with antifungal action are effective. *Ketoconazole*, *selenium sulphide*, *zinc pyrithione* and coal tar are effective. The results from studies suggest that *ketoconazole* is the most and coal tar is the least effective. All treatments need to be left on the scalp for 3–5 min for full effect.

Ketoconazole

There is good evidence of effectiveness of *ketoconazole* in the treatment of dandruff. The formulation available is *ketoconazole* 2% shampoo. The treatment should be used twice a week for 2–4 weeks, after which usage should reduce to weekly or fortnightly as needed to prevent recurrence.

The shampoo can also be used in seborrhoeic dermatitis. Whilst shampooing the lather can be applied to the other affected areas and left before rinsing.

Ketoconazole is not absorbed through the scalp and side-effects are extremely rare. There have been occasional reports of allergic reactions.

Selenium sulphide 2.5%

Selenium sulphide has been shown to be effective and works by reducing the cell turnover rate (cytostatic effect). The shampoos containing this ingredient are P products. Twice-weekly use for the first 2 weeks is followed by weekly use for the next 2 weeks; then it can be used as needed. The hair and scalp should be thoroughly rinsed after using *selenium sulphide* shampoo, otherwise discoloration of blond, grey or dyed hair can result. Frequent use can make the scalp greasy and therefore exacerbate seborrhoeic dermatitis. Products containing selenium *sulphide* should not be used within 48 h of colouring or perming the hair. Contact dermatitis has occasionally been reported. *Selenium sulphide* should not be applied to inflamed or broken skin.

Zinc pyrithione

Shampoos containing *zinc pyrithione* are general sales list (GSL) products and are generally considered as cosmetics. *Zinc pyrithione* is

effective against dandruff and has a cytostatic effect. It should be used twice weekly for the first 2 weeks and then once weekly as required.

Coal tar

Findings from research studies indicate that coal tar is the least effective of the antidandruff agents. Modern formulations are pleasanter than the traditional ones but some people still find the smell of coal tar unacceptable. Coal tar can cause skin sensitisation and is a photosensitiser.

Practical points

Continuing treatment

Patients need to understand that the treatment will not cure their dandruff permanently and that it will be sensible to use the treatment on a less frequent basis to prevent their dandruff coming back.

Treating the scalp

It is the scalp that needs to be treated rather than the hair. The treatment should be applied to the scalp and massaged gently. All products need to be left on the scalp for 5 min before rinsing for the full effect to be gained.

Standard shampoos

There is debate amongst experts as to whether dandruff is caused by infrequent hair-washing. However, it is generally agreed that frequent washing (at least three times a week) is an important part of managing dandruff. Between applications of their treatment the patients can continue to use their normal shampoo. Some may wish to wash their hair with their normal shampoo before using the dandruff treatment shampoo.

Hair products

Gel, mousse and hairspray can still be used and will not adversely affect treatment for dandruff.

Hair loss

The two major types of hair loss are diffuse hair loss and alopecia areata. Alopecia androgenetica (male pattern baldness, sometimes known as common baldness because it can affect women) is the most common cause of diffuse hair loss. Other causes of diffuse hair loss include telogen effluvium, hypothyroidism, severe iron deficiency and protein deficiency. Occasionally, diffuse hair loss is seen after pregnancy, in chronic renal failure and with certain drugs and chemical agents.

Alopecia androgenetica may be treatable, but there are currently no treatments that the pharmacy can offer for alopecia areata. Although hair loss has been regarded largely as a cosmetic problem, the psychological effects on sufferers can be substantial. A sympathetic approach is therefore essential.

What you need to know
Male or female
History and duration of hair loss
Location and size of affected areas
Other symptoms
Influencing factors
Medication

Significance of questions and answers

Male or female

Men and women may both suffer from alopecia androgenetica or alopecia areata. Alopecia areata can affect people at any age.

History and duration of hair loss

Alopecia androgenetica is characterised by gradual onset. In men the pattern of loss is recession of the hairline at the front and/or loss of hair on the top of the scalp. In women the hair loss is generalised and there is an increase in the parting width. Another pattern of hair loss in women in the 20-plus age group is increased shedding of hair but without any increase in the parting width. This latter pattern is not

due to alopecia androgenetica and it is thought that the cause may be nutritional. Hair loss in women is increasingly recognised as a problem.

Alopecia areata may be sudden and result in patchy hair loss. The cause of alopecia areata remains unknown but it is thought that the problem may be autoimmune in origin.

Telogen effluvium usually occurs 2–3 months after significant physical or emotional stress. The rate of hair loss increases significantly for a period of time before resolving spontaneously and returning to normal. Typically this can occur following major surgery or illness.

Location and size of affected area

If the affected area is less than 10 cm in diameter in alopecia androgenetica, then treatment may be worth trying.

Other symptoms

Coarsening of the hair and hair loss can occur as a result of hypothyroidism (myxoedema) where other symptoms might include a feeling of tiredness or being run down, a deepening of the voice, and weight gain.

Inflammatory conditions of the scalp such as ringworm infection (tinea capitis) can cause hair loss. Other symptoms would be itching and redness of the scalp with an advancing reddened edge of the infected area. Referral would be needed in such cases.

In women excessive bleeding during periods (menorrhagia) could lead to iron deficiency and anaemia, which in turn could cause diffuse hair loss or aggravate alopecia androgenetica. Absent or very infrequent periods are sometimes due to polycystic ovary disease or elevated prolactin levels which in both cases can result in alopecia androgenetica.

Influencing factors

Hormonal changes during and after pregnancy mean that hair loss is common both during pregnancy and after the baby is born. While this is often distressing for the woman concerned, it is completely normal and she can be reassured that the hair will grow back. Treatment is not appropriate.

Medication

Cytotoxic drugs are well known for causing hair loss. Anticoagulants (*coumarins*), lipid-lowering agents (*clofibrate*) and vitamin A (in overdose) have also been associated with hair loss. Such cases should be referred to the doctor. Other medications include *allopurinol*,

beta-blockers, *bromocriptine*, *carbamazepine*, *colchicine*, *lithium*, *sodium valproate*.

When to refer
Alopecia areata
Suspected drug-induced hair loss
Suspected hypothyroidism
Menstrual disorders
Suspected anaemia

Treatment timescale

Treatment with *minoxidil* may take up to 4 months to show full effect.

Management

Minoxidil

The only treatment licensed for use in hair loss is *minoxidil*, available as a 2% or 5% lotion with the drug dissolved in an aqueous alcohol solution. *Propylene glycol* is included to enhance absorption. The mechanism of action of *minoxidil* in baldness is unknown. The earlier *minoxidil* is used in balding, the more likely it is to be successful. Treatment is most likely to work where the bald area is less than 10 cm in diameter, where there is still some hair present and where the person has been losing hair for less than 10 years. The manufacturers of *minoxidil* say that the product works best in men with hair loss or thinning at the top of the scalp and in women in a generalised thinning over the whole scalp – both manifestations of alopecia androgenetica. Up to one in three users in such circumstances report hair regrowth of non-vellus (normal) hair and stabilisation of hair loss. A further one in three are likely to report some growth of vellus (fine, downy) hair. The final third will not see any improvement.

It is important that patients understand the factors that make successful treatment more or less likely and believe that their expectations are realistic. Some patients may still want to try the treatment, even where the chances of improvement are small.

After 4–6 weeks, the patient can expect to see a reduction in hair loss. It will take 4 months for any hair regrowth to be seen, and some dermatologists suggest continuing use for 1 year before abandoning treatment. Initially the new hair will be soft and downy but it should

gradually thicken to become like normal hair in texture and appearance.

Application

The lotion should be applied twice daily to the dry scalp and lightly massaged into the affected area. The hair should be clean and dry and the lotion should be left to dry naturally. The hair should not be washed for at least 1 h after using the lotion.

Caution

Irritant and allergic reactions to the *alcohol/propylene glycol* vehicle sometimes occur. A small amount (approximately 1.5%) of the drug is absorbed systemically and there is the theoretical possibility of a hypotensive effect, but this appears to be unlikely in practice. *Minoxidil* is also known to cause a reflex increase in heart rate. While this is a theoretical risk where such small amounts of the drug are involved, tachycardia and palpitations have occasionally been reported. The manufacturers advise against use in anyone with hypertension, angina or heart disease without first checking with the patient's doctor. Although no specific problems have been reported, the manufacturers advise against use when pregnant or breastfeeding.

It is important to explain to patients that they will need to make a long-term commitment to the treatment should it be successful. Treatment must be continued indefinitely; new hair growth will fall out 2–3 months after treatment is stopped. 1 year's treatment costs about £350.

Minoxidil should not be used in alopecia areata or in hair loss related to pregnancy.

Psoriasis

People with psoriasis usually present to the doctor rather than the pharmacist. At the time of first presentation, the doctor is the most appropriate first line of help and pharmacists should always refer cases of suspected but undiagnosed psoriasis. The diagnosis is not always easy and needs confirming. In the situation of a confirmed diagnosis in a relatively chronic situation, the pharmacist can offer continuation of the treatment where the products are available OTC.

This is a condition where continued management and monitoring by the pharmacist is reasonable, with referral back to the doctor when there is an exacerbation or for periodic review. Jointly agreed guidelines between pharmacist and doctors are valuable here.

Psoriasis occurs worldwide with variation in incidence between different ethnic groups. The incidence for white Europeans is about 2%. Although there is a genetic influence, environmental factors are thought to be important.

What you need to know
Appearance
Psychological factors
Diagnosis
Medication

Significance of questions and answers

Appearance

In its most common form there are raised, large, red, scaly patches/plaques over the extensor surfaces of the elbow and knee. The patches are symmetrical and sometimes there is a patch present over the lower back area. The scalp is often involved.

Psychological factors

In some people these patches are very long-standing and show little change. With others, the skin changes worsen and spread to other parts of the body, often in response to a stressful event. This is

particularly distressing for the person involved who then has to cope with the stress of having a relapse of psoriasis as well as the precipitating event.

The psychological impact of having a chronic skin disorder such as psoriasis must not be underestimated. There is still a significant stigma connected with skin disease. There can be a mistaken belief that the rash is contagious. There is a cultural pressure to have a perfect body as defined by the fashion industry and media. Psoriasis can understandably cause loss of self-esteem, embarrassment and depression. This is further compounded by the fact that there is no cure for psoriasis, although treatment will usually result in remission to some extent. Various creams and ointments are available, but many of these are messy, smelly, stain clothes and are time-consuming to apply. The treatments do not always work, and can cause sore skin and stain normal skin around the psoriatic plaque. The prospect of spending 1 h before going to bed applying creams, clearing up the skin scales from the floor and getting into bed with smelly ointments is not an attractive one.

Diagnosis

The diagnosis of psoriasis can be confusing. In the typical situation described above, it is straightforward. In addition to affecting the extensor surfaces, psoriasis can typically involve the scalp (also see p. 180). Often the fingernails show signs of pitting, which is a useful diagnostic guide. However, psoriasis can present with differing patterns that can be confused with other skin disorders. In guttate psoriasis a widespread rash of small, scaly patches develops abruptly, affecting large areas of the body. This most typically occurs in children or young adults and may be triggered by a streptococcal sore throat. In general practice the most common differential diagnosis to guttate psoriasis is pityriasis rosea. This latter condition is self-limiting and usually settles down within 8 weeks.

Psoriasis can also involve the flexor surfaces, the groin area, palms, soles and nails. The most common alternative diagnostic possibilities in these situations include eczema or fungal infections. In 7% of people who have psoriasis there is an associated arthritis, which usually affects a single joint but can be more severe and identical to rheumatoid arthritis.

Medication

It is worthwhile enquiring about routine medications taken. Very occasionally drugs such as *lithium*, beta-blockers and antimalarials have been shown to aggravate pre-existing psoriasis.

Management

Management is dependent on many factors, e.g. nature and severity of psoriasis, understanding the aims of the treatment, ability to apply creams and whether the person is pregnant (some treatments are teratogenic). As always, it is particularly important for the doctor to deal with the person's ideas, concerns and expectations, to appreciate how that person's life is affected by the condition, to give a relevant, understandable explanation and to mutually agree whether to treat or not, and, if so, how.

Topical treatments

The doctor is likely to offer a topical treatment, usually an emollient alone or in conjunction with active therapy.

Dithranol

Dithranol has been a traditional, effective and safe treatment for psoriasis, and in the past was often made up in Lassar's paste, which was effective but messy, with staining and local irritation. Proprietary creams (0.1–2%) are more acceptable, especially when used for one short contact (30 min) period each day and removed using an emollient. Some people are very sensitive to *dithranol* as it can cause quite severe skin irritation. It is usual to start with the lowest concentration and build up slowly to the strongest that can be tolerated. Users should wash their hands after application. It should not be applied to the face, flexures or genitalia. There are some people who are unable to tolerate it at all.

Calcipotriol or tacalcitol

Vitamin D derivatives are available as *calcipotriol* or *tacalcitol*. This does not smell or stain and has been widely used in the treatment of mild to moderate psoriasis. A systematic review has shown it to be as beneficial in efficacy as *dithranol*. If overused, there is a risk of causing hypercalcaemia. It is available as a scalp application as well as an ointment.

Topical steroids

Topical steroids should generally be restricted to use in the flexures or on the scalp. Although effective in suppressing skin plaques on the body, large amounts are required over time as the condition is a chronic one, resulting in severe steroid side-effects (striae, skin atrophy, adrenocortical suppression). Also, stopping steroid preparations can result in a severe flare-up of the psoriasis.

There is a combination cream with *betamethasone* and *calciptriol* which is effective but only licensed for use on up to 30% of body surface for up to 4 weeks.

Second-line treatment

Referral by a doctor to a dermatologist may be necessary when there is diagnostic uncertainty, when the doctor's treatment fails or in severe cases. Second-line treatment may include phototherapy or systemic therapy with *methotrexate*, *etretinate* or *ciclosporin* (*cyclosporin*). Unfortunately, all of these have potentially serious side-effects. *Methotrexate* has been shown to be effective in non-randomised trials but relapse usually occurs within 6 months of discontinuation. Long-term *methotrexate* treatment carries the risk of liver damage.

Painful Conditions

Headache

The most common types of headache that the community pharmacist is likely to encounter are tension headache, migraine and sinusitis. Careful questioning can distinguish causes that are potentially more serious so that referral to the doctor can be advised.

What you need to know
Age
Adult, child
Duration
Nature and site of pain
Frequency and timing
Previous history
Fits, faints, blackouts
Associated symptoms
Nausea, vomiting, photophobia
Precipitating factors: foods, alcohol, stress, hormonal
Recent trauma or injury
Falls
Recent eye test
Medication

Significance of questions and answers

Age

The pharmacist would be well advised to refer any child with a headache to the doctor, especially if there is an associated history of injury or trauma to the head, e.g. from a fall. Children with severe pain across the back of the head and neck rigidity should be referred immediately. Elderly patients sometimes suffer a headache a few days after a fall involving a bang to the head. Such cases may be the result of a slow bleed into the brain causing a subdural haematoma and require immediate referral.

It is unusual for patients to present with their first migraine episode over the age of 40 and such patients should be referred. Overall, the peak incidence of migraine without aura in males is between 10 and

11 and in females between 14 and 17. The incidence of migraine with aura peaks in males at 5 and females between 12 and 13.

Duration

Any headache that does not respond to OTC analgesics within a day requires referral.

Nature and site of pain

Tension headaches are the most common form. The pain is often described as being around the base of the skull and the upper part of the neck. Sometimes the pain extends up and over the top of the head to above the eyes. It is not associated with any neck stiffness. The suboccipital muscles can feel tender to touch. The pain may be described like a band around the head. The pain is usually of a dull nature rather than the pounding or throbbing sensation associated with migraines. However, the nature of the pain alone is not sufficient evidence on which to decide whether the headache is likely to be from a minor or more serious cause.

A steady, dull pain that is deep-sited, severe and aggravated by lying down requires referral, since it may be due to raised intracranial pressure from a brain tumour, infection or other cause. This is rare and usually there would be other associated symptoms such as altered consciousness, unsteadiness, poor coordination and, in the case of an infection, a raised temperature.

Classic migraine is unilateral, affecting one side of the head, especially over the forehead. Rarely, a sudden severe pain that develops at the back of the head may signify a subarachnoid haemorrhage. Sufferers may describe the onset of the pain like being struck on the back of the head with a brick. It occurs when a small blood vessel at the base of the brain leaks blood into the cerebrospinal fluid surrounding the brain. It may be associated with raised blood pressure. Emergency medical referral is essential.

Frequency and timing of symptoms

Pharmacists should regard a headache that is worse in the morning and improves during the day as particularly serious, since this may be a sign of raised intracranial pressure. Cluster headaches typically happen daily for 2–3 months and each episode of pain can last up to 3 h. A person who has headaches of increasing frequency or severity should be referred.

Previous history

It is always reassuring to know that the headache experienced is the usual type for that person. In other words, it has similar characteristics in nature and site but not necessarily in severity to headaches experienced over previous years. This fact makes it much less likely to be from a serious cause, whereas new or different headaches (especially in people over 45) may be a warning sign of a more serious condition. Migraine patients typically suffer from recurrent episodes of headaches. In some cases the headaches occur in clusters. The pain may be present daily for 2–3 weeks and then be absent for months or years.

Associated symptoms

Children and adults with unsteadiness and clumsiness associated with a headache should be referred.

Migraine

Migraine affects about 10% of the UK population (6% of men and 15% of women). In 2001 over £60m. was spent on prescription medication in the UK. There are two common types of migraine: migraine without aura (common migraine), which occurs in 75% cases, and migraine with aura (classic migraine) in up to one-third.

Classic migraine

Classic migraine is often associated with alterations in vision before an attack starts, the so-called prodromal phase. Patients may describe seeing flashing lights or zigzag lines. During the prodromal phase, patients may experience tingling or numbness on one side of the body, in the lips, fingers, face or hands. Migraines are also associated with nausea and sometimes vomiting. Patients often get relief from lying in a darkened room and say that bright light hurts their eyes during an attack of migraine. Classic migraine is three times more common in women than in men.

Common migraine

In common migraine there is no prodromal phase (no aura), both sides of the head may be affected and GI symptoms such as nausea and vomiting may occur.

The International Headache Society has published diagnostic pointers for migraine.

International Headache Society's diagnostic pointers for migraine

Migraine without aura (common migraine)

Attacks lasting 4–72 h
At least two of the following headache characteristics:
- Pulsating/throbbing
- Pain of moderate to severe intensity
- Pain aggravated by movement
- Unilateral pain

At least one associated symptom:
- Nausea and/or vomiting
- Photophobia and phonophobia

Migraine with aura (classic migraine)

At least three of the following characteristics:
- One or more transient focal neurological aura symptoms
- Gradual development of aura symptoms over 4 min or several symptoms in succession
- Aura symptoms lasting 4–60 min
- Headache following or accompanying aura within 60 min

Source: *Cephalalgia*, 1988; **8**(suppl 7): 1–96.

Chronic daily headache (CDH)

CDH is defined as headache that is present on most days, i.e. more than 15 days a month, typically occurring over a 6-month period or longer and it can be daily and unremitting. In some patients, an episode of chronic headache resolves in a much shorter time; it can occur in children and in the very old. Twice as many men have it compared to women. Chronic headache is characterised by a combination of background, low-grade muscle contraction-type symptoms, often with stiffness in the neck, and superimposed migrainous symptoms. There is debate about whether daily use of simple analgesics and combinations containing codeine causes CDH. Any frequent headache needs referral to the GP for assessment.

Cluster headaches (previously called migrainous neuralgia)

Cluster headaches involve, as their name suggests, a number of headaches one after the other. A typical pattern would be daily episodes of pain over 2–3 months, after which there is a remission for anything up to 2 years. The pain can be excruciating and often comes on very quickly even waking the sufferer from sleep. Each episode of pain can last from ½ h to 3 h and the pain is usually experienced on one side of the head, in the eye, cheek or temple. A cluster headache is often

accompanied by a painful, watering eye and a watering or blocked nostril on the same side as the pain. Any recurrent, persistent or severe headache needs referral to the GP for a diagnosis.

Sinusitis

Sinusitis may complicate a respiratory viral infection (e.g. cold) or allergy (e.g. hay fever), which causes inflammation and swelling of the mucosal lining of the sinuses. The increased mucus produced within the sinus cannot drain, a secondary bacterial infection develops and the pressure builds up, causing pain. The pain is felt behind and around the eye and usually only one side is affected. The headache may be associated with rhinorrhoea or nasal congestion. The affected sinus often feels tender when pressure is applied. It is typically worse on bending forwards or lying down.

Temporal arteritis

Temporal arteritis usually occurs in older patients; the arteries that run through the temples become inflamed. They may appear red and are painful and thickened to the touch. However, these signs are not always present. Any elderly patient presenting with a severe frontal or temporal headache that persists and is associated with a general feeling of being unwell should be referred immediately. Temporal arteritis is a curable disease and delay in diagnosis and treatment may lead to blindness, because the blood vessels to the eyes are also affected by inflammation. Treatment usually involves high-dose steroids and is effective provided the diagnosis is made sufficiently early.

Precipitating factors

Tension (psychogenic) headache and migraines may be precipitated by stress, e.g. pressure at work or a family argument. Some migraine sufferers experience their attacks after a period of stress, e.g. when on holiday or at weekends. Certain foods have been reported to precipitate migraine attacks, e.g. chocolate and cheese. Migraine headaches may also be triggered by hormonal changes. In women, migraine attacks may be associated with the menstrual cycle.

Recent trauma or injury

Any patient presenting with a headache who has had a recent head injury or trauma to the head should be referred to the doctor immediately because bruising or haemorrhage may occur, causing a rise in intracranial pressure. The pharmacist should look out for drowsiness or any sign of impaired consciousness. Persistent vomiting after the injury is also a sign of raised intracranial pressure.

Recent eye test

Headaches associated with periods of reading, writing or other close work may be due to deteriorating eyesight and a sight test may be worth recommending to see whether spectacles are needed.

Medication

The nature of any prescribed medication should be established, since the headache might be a side-effect of medication, e.g. nitrates used in the treatment of angina.

Contraceptive pill

Any woman taking the combined OCP and reporting migraine-type headaches, either for the first time or as an exacerbation of existing migraine, should be referred to the doctor, since this may be an early warning of cerebrovascular changes.

Occasionally, a headache is caused by hypertension but, contrary to popular opinion, such headaches are not common and only occur when the blood pressure is extremely high. Nevertheless, the pharmacist should consider the patient's medication carefully. In drug interactions which have led to a rise in blood pressure, e.g. between a sympathomimetic such as pseudoephedrine and a monoamine oxidase inhibitor, a headache is likely to occur as a symptom.

The patient may already be taking an NSAID or other analgesic on prescription and duplication of treatments should be avoided, since toxicity may result. If OTC treatment has already been tried without improvement, referral is advisable.

When to refer
Headache associated with injury/trauma
Severe headache of more than 4 h duration
Suspected adverse drug reaction
Headache in children under 12
Severe occipital headache (across the back of the head)
Headache that is worse in the morning then improves
Associated drowsiness, unsteadiness, visual disturbances or vomiting
Neck stiffness
Frequent migraines requiring prophylactic treatment
Frequent and persistent headaches

Treatment timescale

If the headache does not respond to OTC analgesics within a day, referral is advisable.

Management

The pharmacist's choice of oral analgesic comprises three main agents: *aspirin*, *paracetamol* and *ibuprofen*. These are often combined with other constituents such as *codeine*, *dihydrocodeine*, *doxylamine* and *caffeine*. OTC analgesics are available in a variety of dosage forms and, in addition to traditional tablets and capsules, syrups, soluble tablets and sustained-release dosage forms are available for some products. The peak blood levels of analgesics are achieved 30 min after taking a dispersible dosage form; after a traditional *aspirin* tablet, it may take up to 2 h for peak levels to be reached.

The timing of doses may be important. With a migraine, the analgesic should be taken at the first sign of an attack, preferably in soluble form, since GI motility is slowed during an attack and absorption of analgesics delayed. Combination therapy may sometimes be useful, e.g. an analgesic and decongestant (systemic or topical) in sinusitis. The placebo effect is of great importance in pain relief, since the perception of pain is extremely subjective.

Aspirin

Aspirin is analgesic, antipyretic and also anti-inflammatory if given at doses greater than 4 g daily. It should not be given to children under 16 because of its suspected link with Reye's syndrome. Recent reports indicate that some parents are still unaware of the contraindication in children under 16. Analgesics are often purchased for family use and it is worth reminding parents of the minimum age for the use of aspirin. It has been suggested that in addition to its use in the symptomatic treatment of headaches, doses of *aspirin* on alternate days may be effective in the prophylaxis of migraine. About half of migraine sufferers show significant improvement in their headache 2 h after taking aspirin.

Indigestion

Gastric irritation (indigestion, heartburn, nausea, vomiting) is sometimes experienced by patients after taking *aspirin*, and for this reason the drug is best taken with or after food. When taken as soluble tablets, *aspirin* is less likely to cause gastric irritation and it is also available as an enteric-coated version which is designed so that the *aspirin* is released lower down the GI tract to try and prevent adverse effects. However, evidence indicates that enteric coating does not reduce the risk of *aspirin*-induced gastric bleeding. The pharmacist should also remember that enteric-coated preparations will not be

released quickly and so they are inappropriate where rapid pain relief is required. The local use of *aspirin*, e.g. dissolving a soluble tablet near an aching tooth, is best avoided, since ulceration of the gums may result.

Bleeding

Aspirin can cause GI bleeding and should not be recommended for any patient who either currently has, or has a history of, peptic ulcer. *Aspirin* affects the platelets and clotting function so that bleeding time is increased, and it has been suggested that it should not be recommended for pain after tooth extraction for this reason. The effects of anticoagulant drugs are potentiated by *aspirin*, so it should never be recommended for patients taking these drugs.

Alcohol

Alcohol increases the irritant effect of *aspirin* on the stomach and also its effects on bleeding time. Concurrent administration is therefore best avoided.

Pregnancy

Aspirin is best avoided in pregnancy.

Hypersensitivity

Hypersensitivity to *aspirin* occurs in some people; it has been estimated that 4% of asthmatic patients have this problem and *aspirin* should be avoided in any patient with a history of asthma. When such patients take *aspirin*, they may experience skin reactions (rashes, urticaria), or sometimes shortness of breath, bronchospasm and even asthma attacks.

Paracetamol

Paracetamol has analgesic and antipyretic effects but little or no anti-inflammatory action. The exact way in which *paracetamol* exerts its analgesic effect remains unclear, despite extensive research. However, the drug is undoubtedly effective in reducing both pain and fever. *Paracetamol* is now the analgesic of choice for children under 12 and can be given to children from the age of 3 months onwards. It is less irritating to the stomach than *aspirin* and can therefore be recommended for those patients who are unable to take *aspirin* for this reason. A range of paediatric formulations, including sugar-free syrups, is available. Evidence for the effectiveness of *paracetamol* in the management of migraine is limited. Results vary from showing no

benefit to 1 g *paracetamol* being significantly more effective than placebo.

Liver toxicity

At high doses, *paracetamol* can cause liver toxicity. This can be a problem after an overdose with *paracetamol*, since damage may not be apparent until a few days later. All overdoses of *paracetamol* should be taken seriously and the patient referred to a hospital casualty department.

Ibuprofen

Ibuprofen has analgesic, anti-inflammatory and antipyretic activity and causes less irritation and damage to the stomach than *aspirin*. The dose required for analgesic activity is 200–400 mg, that for anti-inflammatory action 300–600 mg (total daily dose of 1600–2400 mg). The maximum daily dose allowable for OTC use is 1200 mg and *ibuprofen* tablets should not be given to children under 12. *Ibuprofen* suspension 100 mg in 5 ml is available OTC. The doses are given three or four times daily: 2.5 ml for 1–2 years; 5 ml for 3–7 years; 10 ml for 8–12 years. The suspension is not to be given to children under 1 or weighing less than 7 kg (16 lb), and should not be given to children who have asthma without checking with the doctor. As in adults, *ibuprofen* should not be given to children with a stomach ulcer or other serious stomach problem. Five RCTs have found that *ibuprofen* is likely to be effective in migraine treatment.

Indigestion

Ibuprofen can be irritating to the stomach, causing indigestion, nausea and diarrhoea, but less so than *aspirin*. Gastric bleeding can also occur. For these reasons, it is best to advise patients to take *ibuprofen* with or after food, and it is best avoided in anyone with a peptic ulcer or a history of peptic ulcer. Elderly patients seem to be particularly prone to these effects, and pharmacists should exercise care if recommending *ibuprofen* for such patients. *Ibuprofen* can increase the bleeding time due to an effect on platelets. This effect is reversible within 24 h of stopping the drug (whereas reversibility may take several days after stopping *aspirin*).

Ibuprofen seems to have little or no effect on whole blood clotting or prothrombin time, but is still not advised for patients taking anticoagulant medication for whom *paracetamol* would be a better choice.

Hypersensitivity

Cross-sensitivity between *aspirin* and *ibuprofen* occurs, so it would be wise for the pharmacist not to recommend *ibupofren* for anyone with a previous sensitivity reaction to *aspirin*. Since asthmatic patients are more likely to have such a reaction, the use of *ibuprofen* in asthmatic patients should be with caution.

Contraindications

Sodium and water retention may be caused by *ibuprofen* and it is therefore best avoided in patients with congestive heart failure or renal impairment. *Ibuprofen* is best avoided during pregnancy, particularly during the third trimester. Breastfeeding mothers may safely take *ibuprofen*, since it is excreted in only tiny amounts in breast milk.

Interactions

There is evidence of an interaction between *ibuprofen* and *lithium*. *Ibuprofen* may inhibit prostaglandin synthesis in the kidneys and reduce *lithium* clearance. Serum levels of *lithium* are thus raised, with the possibility of toxic effects. *Lithium* toxicity manifests itself as GI symptoms, polyuria, muscle weakness, lethargy and tremor.

Caution

Ibuprofen is best avoided in *aspirin*-sensitive patients and should be used with caution in asthmatics. Adverse effects are more likely to occur in the elderly and *paracetamol* may be a better choice in these cases.

Codeine

Codeine is a narcotic analgesic; a systematic review of evidence from clinical trials showed that a dose of at least 15 mg is required for analgesic effect. *Codeine* is commonly found in combination products with *aspirin*, *paracetamol* or both. Constipation is a possible side-effect and is more likely in elderly patients and others prone to constipation. *Codeine* can also cause drowsiness and respiratory depression, although this may be unlikely at OTC doses.

Dihydrocodeine

Dihydrocodeine is related to *codeine* and has similar analgesic efficacy. A combination product containing *paracetamol* and *dihydrocodeine* is available with a dose per tablet of 7.46 mg *dihydrocodeine*. The product is restricted to use in adults and children over 12. Side-effects include constipation and drowsiness. Like *codeine*, the drug may cause respiratory depression at high doses.

Caffeine

Caffeine is included in some combination analgesic products to produce wakefulness and increased mental activity. It is probable that doses of at least 100 mg are needed to produce such an effect and that OTC analgesics contain 30–50 mg per tablet. A cup of tea or coffee would have the same action. Products containing *caffeine* are best avoided near bedtime because of their stimulant effect. It has been claimed that *caffeine* increases the effectiveness of analgesics but the evidence for such claims is not definitive. *Caffeine* has an irritant effect on the stomach.

Doxylamine succinate

Doxylamine is an antihistamine whose sedative and relaxing effects are probably responsible for its usefulness in treating tension headaches. Like other older antihistamines, *doxylamine* can cause drowsiness and patients should be warned about this. *Doxylamine* should not be recommended for children under 12.

Buclizine

Buclizine is an antihistamine and is included in an OTC compound analgesic for migraine because of its antiemetic action.

Prochlorperazine

Buccal *prochlorperazine* is a P medicine at a maximum strength of 3 mg to treat nausea and vomiting in previously diagnosed migraine patients aged 18 and over. The buccal tablet should be dissolved between the gum and cheek. Maximum daily dose is 12 mg and maximum treatment length is 2 days.

Feverfew

Feverfew is a herb that has been used in the prophylaxis of migraine. Some clinical trials have been conducted to examine its effectiveness, but results have been conflicting. However, the herb appears to be a promising agent in preventing migraines and also perhaps in diminishing the severity of symptoms when a migraine does occur. Adverse effects that have been reported from the use of feverfew include mouth ulceration involving the oral mucosa and tongue (which seems to occur in about 10% of patients), abdominal colic, heartburn and skin rashes. These effects occur both with feverfew leaves and when the herb is formulated in capsules. The herb has a bitter taste, which some patients cannot tolerate. Feverfew was used in the past as an abortifacient and it should not be recommended for pregnant women with migraine.

Headaches in practice

Patient perspectives

'I have suffered from migraine for about 14 years now. At the beginning I didn't get much advice or medical help, but since then I've actively worked to find out what triggers my attacks. I have found that I have to eat at regular intervals; skipping meals can often trigger an attack. I need to drink at least 2 L of water a day and in the summer often much more. Caffeine was a trigger for me and I have stopped drinking coffee and tea now although I enjoy herbal teas. It is really worth experimenting with these as you will find one to your taste, eventually! I cut various things (cheese, red wine) out of my diet for a while to confirm if they were a problem. Other things that I know will set off an attack are lack of sleep and strong perfume.

'Most people, when hearing the word "migraine" think of headache. But people who get migraines know that these are not ordinary headaches. The pain associated with migraine can be debilitating, even disabling – but a lot of people, including healthcare professionals, still don't understand. Sometimes I wish people who think migraines are just a bad headache would have a migraine themselves so they'd know how mistaken they are. Just one migraine for every doctor and pharmacist who will ever treat a migraine patient.'

Case 1

For several years Sandra Brown, a young mother, has purchased combination analgesics for migraine from your pharmacy every few months. She has suffered from migraine headaches since she was a child. Today she asks if you have anything stronger; the tablets do not seem to work like they used to. She is not taking any medicines on prescription (you check whether she is taking the contraceptive pill and she is not). Sandra tells you that she now suffers from migraines two or three times a month and they are making her life a misery. Nothing seems to trigger them and the pain is not more severe than before. She has read about feverfew and wonders whether she should give it a try.

The pharmacist's view

This woman has successfully used an OTC product to treat her migraines for a long time. Many patients who suffer migraines report that they get relief from OTC analgesics. Sandra's migraines have become more frequent for no apparent reason. Feverfew can be effective in preventing migraine in some patients. It would, however, be

sensible to refer her to the doctor to exclude any serious cause of her headaches before considering further treatments.

The doctor's view

It is unlikely that there is a more serious cause for her headaches as she has had them since childhood. However, it makes sense for her to be reviewed by her GP. It would be helpful to get more details of her experience of headaches and associated symptoms, e.g. any preceding visual symptoms, nature and site of headache, duration; other useful information would include her understanding of migraine, any specific concerns she may have and what sort of treatment she would be prepared to try. There is some evidence that headaches improve more quickly if patients' expectations and concerns are addressed adequately in the consultation. It would also be useful to explore what level of stress she was experiencing. A limited examination would be usual, e.g. blood pressure and fundoscopy to look for signs of raised intracranial pressure.

Prophylactic treatments (*propranolol* and *pizotifen*) for migraine are available and are worth considering in patients who report attacks more than four times a month. There does also seem to be some evidence supporting the use of feverfew as a migraine prophylaxis. *Methysergide* is effective in this role but is used rarely because of potential serious adverse effects, e.g. retroperitoneal fibrosis. Another form of medication that has been demonstrated to be effective in migraine prophylaxis is the use of anticonvulsants, e.g. *carbamazepine*, *clonazepam* or *valproate*. 5HT1 agonists, e.g. *sumatriptan*, *zolmitriptan* and *naratriptan*, are effective acute treatments for migraine, producing relief from a headache within 1 or 2 h for many patients. They are contraindicated in those with ischaemic heart disease or poorly controlled hypertension. Research evidence shows that one of every three patients treated with oral *sumatriptan* will have their headache cured or substantially improved, which would not have happened had they been treated with placebo. This is the same success rate demonstrated for treatment with a combination of oral *aspirin* and *metoclopramide*.

Case 2

Wei Lin, a woman aged about 30, has asked to speak to you. She tells you that she would like you to recommend something for the headaches that she has been getting recently. You ask her to describe the headache and she explains that the pain is across her forehead and around the back of the head. The headaches usually occur during the daytime and have been occurring several times a week, for several

weeks. There are no associated GI symptoms and there is no nasal congestion. No medicines are being taken, apart from a compound OTC product containing *aspirin*, which she has been taking for her headaches. On questioning her about recent changes in lifestyle, she tells you that she has recently moved to the area and started a new job last month. In the past she has suffered from occasional headache, but not regularly. This lady does not wear glasses and says she has not had trouble with her eyesight in the past. She confides that she has been worried that the headaches might be due to something serious.

The pharmacist's view

From the information obtained, it sounds as though this woman is suffering from tension headaches. The location of the pain and lack of associated symptoms lead towards this conclusion. The timing of the headaches indicates that this woman's recent move and change of employment are probably responsible for the problem. The pharmacist should obtain information about the current headaches in relation to the patient's past experience. This patient is worried that the headaches may signal a serious problem, but the evidence indicates this would be unlikely. The pharmacist could recommend the use of a combination of *paracetamol* and *doxylamine*, warning about the possibility of drowsiness being induced by the antihistamine. If the headaches do not improve within 1 week, she should see her doctor.

The doctor's view

The pharmacist's assessment makes sense. A tension headache is the most likely explanation. If her symptoms do not settle within 1 week, it would be very reasonable to be reviewed by her GP. The most important aspect of the GP's assessment would be to determine what her concerns about the headache were; for example, many people with headaches become concerned that they might have a brain tumour. Hopefully providing appropriate information and explanation will put her mind at rest.

Case 3

Monowarar Ahmed is a regular visitor to your shop. She is a young mother, aged about 25, and today she seeks your advice about headaches that have been troubling her recently. The headaches are of a migraine type, quite severe and affecting one side of the head. Mrs Ahmed had her second child a few months ago, and when you ask if she is taking any medicines she tells you that she recently started to take the COC pill. In the past she has suffered from migraine-type headaches, but only occasionally and never as severe as the ones

she has been experiencing during the past weeks. The headaches have been occurring once or twice a week for about 2 weeks. *Paracetamol* has given some relief, but Mrs Ahmed would like to try something stronger.

The pharmacist's view

Mrs Ahmed should be referred to her doctor immediately. Her history of migraine headaches associated with the COC is a cause for concern; in addition, you have established that she has suffered from migraine headaches in the past.

The doctor's view

The pharmacist should recommend referral to the doctor. Someone who develops a first migraine attack whilst taking the pill should be told to discontinue it. If there is a previous history of migraine, the pill may sometimes be used, but if the frequency, severity or nature (especially onset of focal neurological symptoms) of the migraines worsens on the pill, then once again the pill should be discontinued. The reason for this advice is that the migraine could herald a cerebral thrombosis (stroke), which could be prevented by stopping the pill.

Musculoskeletal problems

Pharmacists are frequently asked for advice about muscular injuries, sprains and strains. Simple practical advice combined with topical or systemic OTC treatment can be valuable. Sometimes patients who are already taking prescribed medicines for musculoskeletal problems will ask for advice. Here a careful assessment of compliance with prescribed medicines and the need for referral is important.

What you need to know
Age
Child, adult, elderly
Symptoms
Pain, swelling, site, duration
History
Injury
Medical conditions
Medication

Significance of questions and answers

Age

Age will influence the pharmacist's choice of treatment, but other reasons make consideration of the patient's age important. In elderly patients, a fall is more likely to result in a fracture; elderly women are particularly at risk because of osteoporosis. Referral to the local casualty department for X-rays may be the best course of action in such cases.

Symptoms and history

Injuries commonly occur as a result of a fall or other trauma and during physical activity such as lifting heavy loads or taking part in sport. Exact details of how the injury occurred should be established by the pharmacist.

Sprains and strains

Sprains. A sprain injury involves the overstretching of ligaments and/or the joint capsule, sometimes with tearing. The most common sprain involves the lateral ankle ligament. Referral is the best course of action, so that the family practitioner or casualty department doctor can examine the affected area and consider whether a complete tearing of ligaments has occurred, particularly for knee injuries. With a partial tear the knee is often swollen and the patient experiences severe pain on movement. A complete tear may involve the tearing of the capsule itself. If this occurs, any blood or fluid can leak out into the surrounding tissues, so the knee may not appear swollen.

Strains. Strains are injuries where the muscle fibres are damaged by overstretching and tearing. Sometimes the fibres within the muscle sheath are torn, sometimes the muscle sheath itself ruptures and bleeding occurs. Strains are most common in muscles that work over two joints, e.g. the hamstring. When the strain heals, fibrosis can occur, and the muscle becomes shortened. The muscle is then vulnerable to further damage.

Early mobilisation, strengthening exercises and coordination exercises are all important after both sprains and strains. The return to full activity must occur gradually.

Muscle pain

Stiff and painful muscles may occur simply as a result of strenuous and unaccustomed work such as gardening, decorating or exercise, and the resulting discomfort can be reduced by treatment with OTC medicines.

Bruising

Bruising as a result of injury is common and some products that minimise bruising are available OTC. The presence of bruising without apparent injury, or a description by the patient of a history of bruising more easily than usual, should alert the pharmacist to the possibility of a more serious condition. Spontaneous bruising may be symptomatic of an underlying blood disorder, resulting from an adverse drug reaction or other cause.

Head injury

Pain occurring as a result of head injury should always be viewed with suspicion and such patients, particularly children, are best referred for further investigation.

Bursitis

Other musculoskeletal problems about which the pharmacist's advice might be sought include bursitis, which is inflammation of a bursa. (This is the name given to tissues around joints and where bones move over one another. The function of a bursa is to reduce friction during movement.) Examples of bursitis are housemaid's knee and student's elbow.

Fibromyalgia

Fibromyalgia refers to chronic widespread pain affecting both sides of the body both above and below the level of the waist for at least 3 months. This condition may be precipitated by psychological stress and distress, physical trauma, catastrophic events (e.g. war) or infection (e.g. EBV, Lyme disease). Referral to the GP for assessment would be advisable. An empathetic approach from the doctor is important as many patients have felt rejected or that their problems have not been taken seriously by the health professional. Medication (e.g. tricylics, NSAIDs, *gabapentin*) is of limited benefit in these situations.

Frozen shoulder

Frozen shoulder is a common condition where the shoulder is stiff and painful. It is more prevalent in older patients. The shoulder pain sometimes radiates to the arm and is often worse at night. Patients can sometimes relate the problem to injury, exertion or exposure to cold, but frozen shoulder may occur without apparent cause. The pain and limitation of movement are usually so severe that referral to the doctor is advisable.

Painful joints

Pain arising in joints (arthralgia) may be due to arthritis, for which there are many causes. The pain may be associated with swelling, overlying inflammation, stiffness, limitation of movement and deformity of the joint. A common cause of arthritis is osteoarthritis (OA), which is due to wear and tear of the joint. This often affects the knees and hips, especially in the older population. Another form of arthritis is rheumatoid arthritis (RA), which is a more generalised illness caused by the body turning its defences upon itself. Other forms of arthritis can be caused by gout or infection. A joint infection is rare but serious and occasionally fatal. It is often difficult to distinguish between the different causes and it is therefore necessary to refer to the doctor except in mild cases.

Back pain

Lower back pain affects 60–80% of people at some stage in their lives and is often recurrent. Non-serious acute back problems need to be treated early, with mobilisation and exercise thought to be particularly important in the prevention of chronic low back pain. Acute back pain is generally regarded as lasting less than 6 weeks, sub-acute for 6–12 weeks and chronic longer than 12 weeks. The main cause is a strain of the muscles or other soft structures (e.g. ligaments and tendons) connected to the vertebrae. Sometimes it is the cushion between the bones (intervertebral disc) which is strained, and which bulges out (herniates) and presses on the nearby nerves (as in sciatica). These produce 'mechanical' pain. Lower back pain that is not too severe or debilitating and comes on after gardening, awkward lifting or bending may be due to muscular strain (lumbago) and appropriate advice may be given by the pharmacist.

Bed rest is not recommended for simple low back pain. The emphasis is on maintaining activity, supported by pain relief. There is evidence from RCTs that advice to stay active results in increased rate of recovery, reduced pain, reduced disability and reduced time off work compared with advice to rest. If there is no improvement within 1 week, referral is advisable.

Pain that is more severe, causing difficulty with mobility or radiating from the back down one or both legs, is an indication for referral. A slipped disc can press upon the sciatic nerve (hence sciatica) causing pain and sometimes pins and needles and numbness in the leg.

Back pain that is felt in the middle to upper part of the back is less common, and if it has been present for several days, it is best referred to the doctor. Kidney pain can be felt in the back, to either side of the middle part of the back just below the ribcage. If the back pain is associated with any abnormality of passing urine (discoloration of urine, pain on passing urine or frequency), then a kidney problem is more likely.

Repetitive strain disorder

Repetitive strain disorder covers several arm conditions, mainly affecting the forearm. Tenosynovitis is the term that has been used to refer to conditions around the wrist which sometimes occur in computer operators. The condition presents as swelling on the back of the forearm. There may be crepitus (a creaking, grating sound) when the wrist is moved. Sometimes the symptoms disappear on stopping the job, but they may return when the work is restarted.

Whiplash injuries

Neck pain following a car accident can last for a long period – up to 2 years in some cases. Good posture is important and keeping both the back and head straight has been shown to reduce pain and help recovery. A physiotherapist's advice would probably include the recommendation to sleep with only one pillow to facilitate extension of the neck.

Medication

Prescribed medication

Sufferers, for example, of RA or chronic back pain, are likely to be taking painkillers or NSAIDs prescribed by their doctor. Although the recommendation of a topical analgesic would produce no problems in terms of drug interactions, if the patient is in considerable and regular pain despite prescribed medication, or the pain has become worse, referral back to the doctor would be appropriate.

Side-effects. In elderly patients, it should be remembered that falls may occur as a result of postural hypotension, dizziness or confusion as adverse effects from drug therapy. Any elderly patient reporting falls should be carefully questioned about current medication, and the pharmacist should contact the doctor if an adverse reaction is suspected.

Self-medication

The pharmacist should also enquire about any preparations used in self-treatment of the condition and their degree of effectiveness.

When to refer
Suspected fracture
Possible adverse drug-reaction: falls, bruising
Head injury
Medication failure
Arthritis
Severe back pain
Back pain (and/or pins and needles/numbness) radiating to leg
Back pain in the middle/upper back (especially in the older patient)

Treatment timescale

Musculoskeletal conditions should respond to treatment within a few days. A maximum of 5 days' treatment should be recommended, after which patients should see their doctor.

Management

A wide range of preparations containing systemic and topical analgesics is available (see p. 201 for a discussion of systemic analgesics). The oral analgesic of choice would usually be an NSAID such as *ibuprofen*, providing there were no contraindications. Taking the analgesic regularly is important to obtain full effect and the patient needs to know this. Topical formulations include creams, ointments, lotions, sticks and sprays.

Topical analgesics

There is a high placebo response to topical analgesic products. This is probably because the act of massaging the formulation into the affected area will increase blood flow and stimulate the nerves, leading to a reduction in the sensation of pain.

Counter-irritants and rubefacients

Counter-irritants and rubefacients cause vasodilatation, inducing a feeling of warmth over the area of application. Counter-irritants produce mild skin irritation, and the term rubefacient refers to the reddening and warming of the skin. The theory behind the use of topical analgesics is that they bombard the nervous system with sensations other than pain (warmth, irritation) and this is thought to distract attention from the pain felt. Simply rubbing or massaging the affected area produces sensations of warmth and pressure and can reduce pain. Massage is known to relax muscles and it has also been suggested that massage may disperse some of the chemicals that are responsible for producing pain and inflammation by increasing the blood flow. The mode of action of topical analgesics is therefore twofold: one effect relying on absorption of the agent through the skin, the other on the benefit of the massage. There is no published evidence on the effectiveness of counter-irritants and rubefacients. This is not surprising as many of the active ingredients and formulations have been available for many years.

There are many proprietary formulations available, often incorporating a mixture of ingredients with different properties. Most pharmacists and customers have their own favourite product. For customers who live alone, a spray formulation, which does not require massage, can be recommended for areas such as the back and shoulders. Generally, patients can be advised to use topical analgesic products up to four times a day, as required.

Methyl salicylate

Methyl salicylate is one of the most widely used and effective counter-irritants. Wintergreen is its naturally occurring form; synthetic versions are also available. The agent is generally used in concentrations between 10% and 60% in topical analgesic formulations.

Nicotinates

Nicotinates (e.g. *ethyl nicotinate*, *hexyl nicotinate*) are absorbed through the skin and produce reddening of the skin, increased blood flow and an increase in temperature. *Methyl nicotinate* is used at concentrations of 0.25–1% to produce its counter-irritant and rubefacient effects. There have been occasional reports of systemic adverse effects following absorption of *nicotinates*, such as dizziness or feelings of faintness, which are due to a drop in blood pressure following vasodilatation. However, systemic adverse effects are rare, seem to occur only in susceptible people and are usually due to use of the product over a large surface area.

Menthol

Menthol has a cooling effect when applied to the skin and acts as a mild counter-irritant. Used in topical formulations in concentrations of up to 1%, *menthol* has antipruritic actions, but at higher concentrations it has a counter-irritant effect. When applied to the skin in a topical analgesic formulation, *menthol* gives a feeling of coolness, followed by a sensation of warmth.

Camphor

In concentrations of up to 3%, *camphor* has antipruritic actions; in higher concentrations it acts as a counter-irritant and rubefacient. *Camphor* is highly toxic if swallowed, and problems of toxicity led to the withdrawal from sale of some well-known formulations including *camphorated oil*.

Capsaicin/capsicum

The sensation of hotness from eating peppers is caused by the excitation of nerve endings in the skin, body organs and airways. Capsicum preparations, e.g. *capsaicin capsicum* and *capsicum oleoresin*, produce a feeling of warmth when applied to the skin. They do not cause reddening because they do not act on capillary or other blood vessels. *Capsaicin* (available on prescription) has been the subject of research in clinical trials as an analgesic for postherpetic pain and this work is continuing. Studies in patients with arthritis have also shown effectiveness. *Capsaicin* has few side-effects. A small amount needs to

be rubbed well into the affected area. Patients should always wash their hands after use, otherwise they may inadvertently transfer the substance to the eyes, causing burning and stinging.

Topical anti-inflammatory agents

Topical gels, creams and ointments containing NSAIDs are widely used in the UK. Clinical trials have shown them to be more effective than placebo in relieving musculoskeletal pain. However, there have been no comparative trials with counter-irritants and rubefacients.

Ibuprofen, *felbinac*, *ketoprofen* and *piroxicam* are available in a range of cream and gel formulations. The drug is absorbed into the bloodstream and appears to become concentrated in the affected tissues. Topical NSAIDs (except *benzydamine*) should not be used by patients who experience adverse reactions to *aspirin* such as asthma, rhinitis or urticaria. Because of the higher likelihood of *aspirin* sensitivity in patients with asthma, caution should be exercised when considering recommending a topical NSAID. Several reports of bronchospasm have been received following the use of these products. Rarely, GI side-effects have occurred, mainly dyspepsia, nausea and diarrhoea.

Heparinoid and hyaluronidase

Heparinoid and *hyaluronidase* are enzymes that may help to disperse oedematous fluid in swollen areas. A reduction in swelling and bruising may therefore be achieved. Products containing *heparinoid* or *hyaluronidase* are used in the treatment of bruises, strains and sprains.

Glucosamine

Glucosamine has been shown to have some effect in reducing pain in OA. The research shows that it may be as effective as NSAIDs in reducing pain. Most trials used a daily dose of 1500 mg. Overall it appears that for every five patients who are treated with oral *glucosamine*, one would have short-term benefits in reduced pain and inflammation, which would not have been achieved with a placebo. The research so far is only relatively short-term. Adverse effects are uncommon and include abdominal discomfort and tenderness, heartburn, diarrhoea and nausea. There is insufficient information about pharmaceutical quality and actual content of *glucosamine* to enable pharmacists to make informed choices between available products. Some are produced from natural sources (the shells of crabs and other crustaceans) while others are synthesised from glutamic acid and glucose. *Glucosamine* products are sometimes

combined with *chondroitin*, which is said to be beneficial in relining worn-out joint surfaces, but there is no research evidence supporting this claim.

Acupuncture

There are no RCTs of acupuncture in acute low back pain and thus no evidence of effectiveness. For chronic low back pain, 8 of 11 RCTs found acupuncture to be no more effective than placebo.

Practical points

First aid treatment of sprains and strains

The priority in treating sprains and soft tissue injuries is to apply compression, cooling and elevation immediately, and this combination should be maintained for at least 48 h. Although cooling has generally been the priority in the past, latest research evidence suggests that compression is the first priority. The aim of the treatment is to prevent swelling. If swelling is not minimised, the resulting pain and pressure will limit movement, lead to muscle wasting, cause pain and delay recovery. Ice packs by themselves will reduce metabolic needs of the tissues, reduce blood flow and result in less tissue damage and swelling, but will not prevent haemorrhage.

The area should be wrapped around with a cotton wool pad and held in place with a crepe bandage.

Once the injury has been protected and a compression bandage applied, an ice pack should be used. Its function is to produce vasoconstriction, thus preventing further blood flow into the injured area from the torn capillaries, and in turn minimising further bruising and swelling. Proprietary cold packs are available, but in emergencies various items have been brought into service. For example, a bag of frozen peas is an excellent cold pack for the knee or ankle because it can be easily applied and wrapped around the affected joint.

The affected limb should be elevated to reduce blood flow into the damaged area by the effect of gravity. This will, in turn, reduce the amount of swelling caused by oedema. Finally, the injured limb should be rested to facilitate recovery. The acronym RICE is a useful aide-memoire for the treatment of sprains and strains.

R Rest
I Ice/cooling
C Compression
E Elevation

Heat

The application of heat can be effective in reducing pain. However, heat should never be applied immediately after an injury has occurred because heat application at the acute stage will dilate blood vessels and increase blood flow into the affected area – the opposite effect to what is needed. After the acute phase is over (1 or 2 days after the injury), heat can be useful. The application of heat can be both comforting and effective in chronic conditions such as back pain.

Patients can use a hot-water bottle, a proprietary heat pack or an infrared lamp on the affected area. Heat packs contain a mixture of chemicals that give off heat and the packs are disposable. Keeping the joints and muscles warm can also be helpful and wearing warm clothing, particularly in thin layers that can retain heat, is valuable.

Prevention of recurrent back pain

Good posture, lifting correctly, a good mattress and losing excess weight can help. Paying attention to posture and body awareness is important, and classes to relearn good posture may help some patients (e.g. Feldenkrais method, Alexander technique). The additional pressure on the spine caused by excess weight may lead to structural compromise and damage (e.g. injury, sciatica). The lower back is particularly vulnerable to the effects of obesity, and lack of exercise leads to poor flexibility and weak back muscles.

Irritant effect of topical analgesics

Preparations containing topical analgesics should always be kept well away from the eyes, mouth and mucous membranes and should not be applied to broken skin. Intense pain and irritant effects can occur following such contact. This is due to the ready penetration of the irritant topical analgesics through both mucosal surfaces and direct access, via the broken skin. When preparations are applied to thinner and more sensitive areas of the skin, irritant effects will be increased; hence the restrictions on the use of topical analgesics in young children recommended by some manufacturers for their products. Therefore, the manufacturer's instructions and recommendations should be checked. Sensitisation to counter-irritants can occur; if blistering or intense irritation of the skin results after application, the patient should discontinue use of the product.

Musculoskeletal problems in practice

Case 1

Charan Gogna, a regular customer in his late twenties, comes into your pharmacy. He asks what you would recommend for a painful lower back following his weekend football game; he thinks he must have pulled a muscle and says he has had the problem before in the same spot. On questioning, you find out that he has not taken any painkillers or used any treatment. He is not taking any other medicines.

The pharmacist's view

Mr Gogna could take an oral analgesic regularly until the discomfort subsides. A topical analgesic could also be useful if gently massaged into the affected area. Since the back is hard to reach, a spray formulation might be easier than a rub. Evidence shows that bedrest does not speed up recovery, and Mr Gogna should be advised to continue his usual daily routine.

The doctor's view

His low back pain should settle in a few days. As he has had recurrent bouts of pain he could be reviewed by his GP. A more detailed history of his problem describing his occupation would be useful with an examination of his back. Depending on the findings, he might be advised to see a physiotherapist or an osteopath. His posture and way of moving might be less than ideal, and might be putting him at risk of future problems. If this is so, he might benefit from attending classes with an Alexander or Feldenkrais teacher.

Case 2

A middle-aged man comes into your shop. He is wearing a tracksuit and training shoes and asks what you can recommend for an aching back. On questioning, you find out that the product is in fact required for his wife, who was doing some gardening yesterday because the weather was fine and who now feels stiff and aching. The pain is in the lower back and is worse on movement. His wife is not taking any medicines on a regular basis but took two *paracetamol* tablets last night, which helped to reduce the pain.

The pharmacist's view

In this case it would have been very easy for the pharmacist to assume that the man in the shop was the patient whereas, in fact, he was making a request on his wife's behalf. This emphasises the importance

of establishing the identity of the patient. The history described is of a common problem: muscle stiffness following unaccustomed or strenuous activity, in this case, gardening. The pharmacist might recommend a combination of systemic and topical therapy. If there were an adequate supply of *paracetamol* tablets at home, the woman could continue to take a maximum of two tablets four times daily until the pain resolved. Alternatively, *ibuprofen* could be advised, after checking that there were no contraindications to its use. In addition, a topical rub or spray containing counter-irritants would help to warm the area and reduce pain. The woman should see her doctor if the symptoms have not improved within 5 days.

The doctor's view

The story is suggestive of simple muscle strain, which should settle with the pharmacist's advice within a few days. It would be helpful to inquire whether or not she has had backaches before and, if so, what happened. It would also be worth checking that she did not have pain or pins and needles radiating down her legs. If these symptoms were present, then she might have a slipped disc and referral to her doctor would be advisable.

Case 3

An elderly female customer who regularly visits your pharmacy asks what would be the best thing for rheumatic pain, which is worse now that the weather is getting colder. The pain is in the joints, particularly of the fingers and knees. On further questioning, you find out that she has suffered from this problem for some years and that she sees her doctor quite regularly about this and a variety of other complaints. On checking your patient medication records, you find that she is taking five different medicines a day. Her regular medication includes a combination diuretic preparation, sleeping tablets and analgesics for her arthritis (*co-dydramol* plus an NSAID). The joint pains seem to have become worse during the recent spell of bad weather.

The pharmacist's view

It would be best for this customer to see her doctor. She is already taking several medicines, including analgesics for arthritis. It would therefore be inappropriate for the pharmacist to consider recommendation of a systemic anti-inflammatory or analgesic because of the possibilities of interaction or duplication. Indeed, the recent worsening of the symptoms indicates that consultation with the doctor would be wise. Perhaps this woman is not taking all her medicines; the

pharmacist could explore any compliance problems with her before referring her back to the doctor.

The doctor's view

Referral to the doctor is advisable. She may have OA, RA or even some other form of arthritis and the doctor would be in the best position to advise further treatment. The GP is already likely to have made an assessment of her joint pains. OA most commonly affects the end joints of the fingers, whereas RA affects the other small joints of the fingers and knuckles. Knees can be affected by both OA and RA, whereas in the case of the hip, OA is most common. A feature of RA is morning joint stiffness. Blood tests and X-rays can assist the diagnosis. An appointment with the GP would also give an opportunity to review her medication. She may not have been taking her medicines regularly. It would be helpful to find out whether she is experiencing adverse effects and to renegotiate her treatment.

Women's Health

Cystitis

Cystitis is a term used to describe a collection of urinary symptoms including dysuria, frequency and urgency. The urine may be cloudy and strong-smelling; these may be signs of bacterial infection. In 50% of cases no bacterial cause is found. When infection is present, the common bacteria are *E. coli*, *Staph. saprophyticus* and *Proteus mirabilis*, and the source is often the GI tract. About half of cases will resolve within 3 days even without treatment. Cystitis is common in women but rare in men; it has been estimated that more than one in two women will experience an episode of cystitis during their lives. The pharmacist should be aware of the signs that indicate more serious conditions. OTC products are available for the treatment of cystitis, but are recommended only when symptoms are mild, or for use until patients can consult their doctor.

What you need to know
Age
Adult, child
Male or female
Symptoms
Urethral irritation
Urinary urgency, frequency
Dysuria (pain on passing urine)
Haematuria (blood in the urine)
Vaginal discharge
Associated symptoms
Back pain
Lower abdominal (suprapubic) pain
Fever, chills
Nausea/vomiting
Duration
Previous history
Medication

Significance of questions and answers

Age

Any child with the symptoms of cystitis should always be referred to the doctor for further investigation and treatment. Urinary tract infections (UTIs) occur in children, and damage to the kidney or bladder may result, particularly after recurrent infections.

Gender

Cystitis is much more common in women than in men for two reasons:

(1) Cystitis occurs when bacteria pass up along the urethra and enter and multiply within the bladder. As the urethra is much shorter in females than in males, the passage of the bacteria is much easier. In addition, the process is facilitated by sexual intercourse.
(2) There is evidence that prostatic fluid has antibacterial properties, providing an additional defence against bacterial infection in males.

Referral

Any man who presents with the symptoms of cystitis requires medical referral because of the possibility of more serious conditions such as kidney or bladder stones, or prostate problems.

Pregnancy

If a pregnant woman presents with symptoms of cystitis, referral to the doctor is the best option, because bacteruria (presence of bacteria in the urine) in pregnancy can lead to kidney infection and other problems.

Symptoms

Cystitis sufferers often report that the first sign of an impending attack is an itching or pricking sensation in the urethra. The desire to pass urine becomes frequent and women with cystitis may feel the need to pass urine urgently, but pass only a few burning, painful drops. This frequency of urine occurs throughout the day and night. Dysuria (pain on passing urine) is a classical symptom of cystitis. After urination, the bladder may not feel completely empty, but even straining produces no further flow. The urine may be cloudy and strong-smelling; these may be signs of bacterial infection.

Blood in urine

Haematuria (presence of blood in the urine) is an indication for referral to the doctor. It often occurs in cystitis when there is so much inflammation of the lining of the bladder and urethra that

bleeding occurs. This is not serious and responds quickly to antibiotic treatment. Sometimes blood in the urine may indicate other problems such as a kidney stone. When this occurs, pain in the loin or between the loin and groin is the predominant symptom. When blood in the urine develops without any pain, specialist referral is required to exclude the possibility of a tumour in the bladder or kidney.

Vaginal discharge

The presence of a vaginal discharge would indicate local fungal or bacterial infection and would require referral.

Associated symptoms

When dealing with symptoms involving the urinary system, it is best to think of it as divided into two parts: the upper (kidneys and ureters) and the lower (bladder and urethra). The pharmacist should be aware of the symptoms that accompany minor lower UTI and those that suggest more serious problems higher in the urinary tract, so that referral for medical advice can be made where appropriate.

Upper urinary tract infection symptoms

Systemic involvement, demonstrated by fever, nausea, vomiting, loin pain and tenderness, are indicative of more serious infection such as pyelitis or pyelonephritis and patients with such symptoms require referral.

Other symptoms

Cystitis may be accompanied by suprapubic (lower abdominal) pain and tenderness; pain is sometimes felt in the lower back.

Duration

Treatment with OTC preparations is reasonable for mild cystitis of short duration (less than 2 days).

Previous history

Women with recurrent cystitis should see their doctor. One in two episodes of cystitis is not caused by infection and the urethral syndrome is thought to be responsible for these non-infective cases. The anxiety produced by repeated occurrences of cystitis is itself thought to be a contributory factor.

It has been estimated that one in ten cases of UTI is followed by relapse (the same bacterium being responsible) or reinfection (where a different organism may be involved). The remaining nine cases clear up without recurrence.

Diabetes

Recurrent cystitis can sometimes occur in diabetic patients and therefore anyone describing a history of increasing thirst, weight loss and a higher frequency of passing urine than normal should be referred.

Honeymoon cystitis

Sexual intercourse may precipitate an attack (honeymoon cystitis) due to minor trauma or resulting infection when bacteria are pushed along the urethra.

Other precipitating factors

Other precipitating factors may include the irritant effects of toiletries (e.g. bubble baths and vaginal deodorants) and other chemicals (e.g. spermicides and disinfectants). Lack of personal hygiene is not thought to be responsible, except in extreme cases.

Postmenopausal women

Oestrogen deficiency in postmenopausal women leads to thinning of the lining of the vagina. Lack of lubrication can mean the vagina and urethra are vulnerable to trauma and irritation and attacks of cystitis can occur. For such women, painful intercourse can also be a problem and this can be treated with OTC lubricants or prescribed products (e.g. oestrogen creams). Lubricant products are available OTC and newer formulations mean that a single application can remain effective for several days. Should this approach be unsuccessful, or if other troublesome symptoms be present, referral to the doctor would be advisable.

Medication

Cystitis can be caused by cytotoxic drugs such as *cyclophosphamide* and also by *methenamine hippurate* (*hexamine*) (because of formaldehyde release). It has been claimed that the incidence of cystitis is higher in women who are on the pill; however, no causative effect has ever been shown. It has been suggested that since women taking the pill are more likely to be sexually active, this may explain the difference in incidence of cystitis.

When to refer
All men, children
Fever, nausea/vomiting
Loin pain or tenderness

Haematuria
Vaginal discharge
Duration of longer than 2 days
Pregnancy
Recurrent cystitis
Failed medication

The identity of any preparations already taken to treat the symptoms is therefore important. The pharmacist may then decide whether an appropriate remedy has been used. Failed medication would be a reason for referral to the doctor.

Treatment timescale

If symptoms have not subsided within 2 days of beginning treatment, the patient should see her doctor.

Management

For pain relief, offer *paracetamol* or *ibuprofen* for up to 2 days. A high temperature will also be reduced, bearing in mind that a level above 38.5°C is more characteristic of pyelonephritis. The pharmacist can also recommend a product that will alkalinise the urine and provide symptomatic relief, although there is no good evidence of its effectiveness. Other OTC preparations are of doubtful value. In addition to treatment, it is important for the pharmacist to offer advice about fluid intake (see 'Practical points' below). For women in whom cystitis is a recurrent problem, self-help measures can sometimes prevent recurrence. Literature can be offered on this subject.

Potassium and sodium citrate

Potassium and sodium citrate work by making the urine alkaline. The acidic urine produced as a result of bacterial infection is thought to be responsible for dysuria; alkalinisation of the urine can therefore provide symptomatic relief. While easing discomfort, alkalinising the urine will not produce an antibacterial effect, and it is important to tell patients that if symptoms have not improved within 2 days, they should see their doctor. Proprietary sachets are more palatable than *potassium citrate mixture*.

Contraindications. There are some patients for whom such preparations should not be recommended. For *potassium citrate* these

would include anyone taking potassium-sparing diuretics, aldosterone antagonists or ACE inhibitors, in whom hyperkalaemia may result. Sodium citrate should not be recommended for hypertensive patients, anyone with heart disease or pregnant women.

Advice. *Potassium citrate mixture* tastes unpleasant, despite its fruity lemon smell, and patients should be advised to dilute the mixture well with cold water.

Warning. Patients should be reminded not to exceed the stated dose of products containing *potassium citrate*: several cases of hyperkalaemia have been reported in patients taking *potassium citrate mixture* for relief from urinary symptoms.

Complementary therapies

Cranberry juice has been recommended as a folk remedy for years as a preventive measure to reduce UTI. A systematic review of evidence showed that drinking *cranberry juice* on a regular basis (300 ml per day) has a bacteriostatic effect. The mechanism for this is unknown and the full clinical implications have not been elucidated. *Cranberry juice* is unlikely to be effective in the treatment of acute cystitis. For women who are prone to cystitis, drinking *cranberry juice* is not harmful and might help.

Practical points

1 PRODIGY points out that there is little evidence to support much of the traditional advice that has been given to women with cystitis, and the list below can be discussed with the woman to consider acceptability.

(i) Drinking large quantities of fluids should theoretically help in cystitis because the bladder is emptied more frequently and completely as a result of the diuresis produced; this is thought to help flush the infecting bacteria out of the bladder. However, this may cause more discomfort where dysuria is severe and may be better as advice to prevent recurrence rather than to use during treatment.
(ii) During urination the bladder should be emptied completely by waiting for 20 s after passing urine and then straining to empty the final drops. Leaning backwards is said to help to achieve a complete emptying of the bladder than the usual sitting posture.
(iii) After a bowel motion wiping toilet paper from front to back may minimise transfer of bacteria from the bowel into the vagina and urethra.

(iv) Urination immediately after sexual intercourse will theoretically flush out most bacteria from the urethra but there is no evidence to support this.

2 There are several paperbacks published on the subject of cystitis, including Angela Kilmartin's *Cystitis: Understanding it and Preventing it*.

3 Reduced intake of coffee and alcohol may help because these substances seem to act as bladder irritants in some people.

Cystitis in practice

Case 1

Mrs Anne Lawson, a young woman in her twenties, asks to have a quiet word with you. She tells you she thinks she has cystitis. Upon questioning, you find that she is not passing urine more frequently than normal, but that her urine looks dark and smells unpleasant. Mrs Lawson has back pain and has been feeling feverish during today. She is not taking any medicine from the doctor and has not tried anything to treat her symptoms.

The pharmacist's view

This woman has described symptoms that are not of a minor nature. In particular, the presence of fever and back pain indicates an infection higher in the urinary tract. Mrs Lawson should see her doctor as soon as possible.

The doctor's view

Referral is advisable. She may have a UTI, possibly in the kidney. However, there is insufficient information to make a definite diagnosis. It would be useful to know if she has pain on passing urine and the site and nature of her back pain. Her symptoms could in fact be accounted for by a flu-like viral infection in which the backache is caused by muscular inflammation and the urine altered because of dehydration.

Case 2

A young man asks if you can recommend a good treatment for cystitis. In response to your questions, he tells you that the medicine is for him: he has been having pain when passing urine since yesterday. He feels otherwise well and does not have any other symptoms. No treatments have been tried already and he is not currently taking any medicines.

The pharmacist's view

This man should be referred to the doctor because the symptoms of cystitis are uncommon in men and may be the result of a more serious condition.

The doctor's view

Referral is necessary for accurate diagnosis. A urine sample will need to be collected for appropriate analysis. If it shows that he has a urinary infection, then treatment with a suitable antibiotic can be given and a referral to a specialist for further investigation made. If in addition to discomfort on passing urine he develops a urethral discharge, he is most likely to be suffering from a sexually transmitted disease (STD) such as a chlamydia infection (previously called non-specific urethritis (NSU)) or gonorrhoea.

Case 3

It is Saturday afternoon and a young woman whom you do not recognise as a regular customer asks for something to treat cystitis. On questioning, you find out that she has had the problem several times before and that her symptoms are frequency and pain on passing urine. She is otherwise well and tells you that her doctor has occasionally prescribed antibiotics to treat the problem in the past. She is not taking any medicines.

The pharmacist's view

This woman represents a common situation in community pharmacy. She has had these symptoms before and is unlikely to be able to see her doctor before Monday. Since only half of all cases of cystitis are caused by an infection, antibiotic treatment without a urine culture is now discouraged. She should see her doctor on Monday if the symptoms have not improved and the pharmacist could suggest that she take a urine sample with her, although in practice the GP may prescribe without test results. In the meantime, she is experiencing considerable discomfort. It would be reasonable to recommend the use of an alkalinising agent, such as *sodium* or *potassium citrate*, over the weekend. Proprietary formulations are more pleasant-tasting than the *potassium citrate mixture* and they are very acceptable to patients. You could advise her to drink plenty of fluids but with minimum consumption of tea, coffee and alcohol, all of which may cause dehydration and make the problem worse.

The doctor's view

The story is suggestive of cystitis. Symptomatic treatment with *potassium citrate* may help until after the weekend. It would be interesting to know how her infections usually resolve. If her symptoms did not ease with an alkalinising agent, she could be advised to speak to the on-call GP. If she had severe symptoms, it would be reasonable to start treatment with an antibiotic. If she brought a urine sample, the GP could test it immediately with a Multistix dip test, which would determine the presence or not of protein, red blood cells, leucocytes and nitrite. Positive results for the latter two would be very suggestive of a bacterial infection. It would be important to check whether she is pregnant or on the combined oral contraceptive pill before prescribing antibiotics. Resistance to *trimethoprim* is increasing so *cefalexin* is often prescribed as a first-line antibiotic. Resistance to *cefalexin* occurs in about 20% of cases. It should not generally be used in those who are allergic to *penicillin* as there is a 10% chance of crossover hypersensitivity.

Dysmenorrhoea

It has been estimated that as many as one in two women suffer from dysmenorrhoea (period pains). Up to one in ten of those affected will have severe symptoms, which necessitate time off school or work. Many of these women will try self-medication, seeking advice from their doctor only if this treatment is unsuccessful. Pharmacists should remain aware that discussing menstrual problems is potentially embarrassing for the patient and should therefore try to create an atmosphere of privacy.

What you need to know
Age
Previous history
Regularity and timing of cycle
Timing and nature of pains
Relationship with menstruation
Other symptoms
Headache, backache
Nausea, vomiting, constipation
Faintness, dizziness, fatigue
Premenstrual syndrome (PMS)
Medication

Significance of questions and answers

Age

The peak incidence of primary dysmenorrhoea occurs in women between the ages of 17 and 25. Primary dysmenorrhoea is defined as pain in the absence of pelvic disease, whereas secondary dysmenorrhoea refers to pain, which may be due to underlying disease. Secondary dysmenorrhoea is most common in women aged over 30 and is rare in women aged under 25. Common causes of secondary dysmenorrhoea include endometriosis or pelvic inflammatory disease (PID). Primary dysmenorrhoea is uncommon after having children.

Previous history

Dysmenorrhoea is often not associated with the start of menstruation (menarche). This is because during the early months (and sometimes years) of menstruation, ovulation does not occur. These anovulatory cycles are usually, but not always, pain-free and therefore women sometimes describe period pain that begins after several months or years of pain-free menstruation. The pharmacist should establish whether the menstrual cycle is regular and the length of the cycle. Further questioning should then focus on the timing of pains in relation to menstruation.

Timing and nature of pains

Primary dysmenorrhoea

Primary dysmennohoea classically presents as a cramping lower abdominal pain that often begins during the day before bleeding starts. The pain gradually eases after the start of menstruation and is often gone by the end of the first day of bleeding.

Mittelschmerz. Mittelschmerz is ovulation pain which occurs midcycle, at the time of ovulation. The abdominal pain usually lasts for a few hours, but can last for several days and may be accompanied by some bleeding.

Secondary dysmenorrhoea

The pain of secondary or acquired dysmenorrhoea may occur during other parts of the menstrual cycle and can be relieved or worsened by menstruation. Such pain is often described as a dull, aching pain rather than being spasmodic or cramping in nature. Often occurring up to 1 week before menstruation, the pain may get worse once bleeding starts. The pain may occur during sexual intercourse. Secondary dysmenorrhoea is more common in older women, especially in those who have had children. In pelvic infection, a vaginal discharge may be present in addition to pain. If, from questioning, the pharmacist suspects secondary dysmenorrhoea, the patient should be referred to her doctor for further investigation.

Endometriosis. Endometriosis mainly occurs in women aged between 30 and 45, but can occur in women in their twenties. The womb (uterus) has a unique inner lining surface (endometrium). In endometriosis, pieces of endometrium are also found in places outside the uterus. These isolated pieces of endometrium may lie on the outside of the uterus or ovaries, or elsewhere in the pelvis. Each section of endometrium is sensitive to hormonal changes occurring during the menstrual cycle and goes through the monthly changes of thickening,

shedding and bleeding. This causes pain wherever the endometrial cells are found. The pain usually begins up to 1 week before menstruation and both lower abdominal and lower back pain may occur. The pain may also be non-cyclical and may occur with sexual intercourse (dyspareunia). Endometriosis may cause subfertility.

Mittelschmerz. Mittelschmerz can be severe and the cycle can sometimes be shortened, so that ovulation pain may be closely followed by premenstrual and menstrual pain. Once the flow of blood is established, pain may be relieved.

Pelvic inflammatory disease. Pelvic infection can occur and may be acute or chronic in nature. It is important to know whether or not an intrauterine contraceptive device (coil) is used. The coil can cause increased discomfort and heavier periods, but also may predispose to infection. Acute pelvic infection occurs when a bacterial infection develops within the fallopian tubes. There is usually severe pain, fever and vaginal discharge. The pain is in the lower abdomen and may be unrelated to menstruation. It may be confused with appendicitis.

Chronic PID may follow on from an acute infection. The pain tends to be less severe, associated with periods and may be experienced during intercourse. It is thought that adhesions that develop around the tubes following an infection may be responsible for the symptoms in some women. In others, however, no abnormality can be found and pelvic congestion is assumed to be the cause. In this situation psychological factors are thought to be important.

Other symptoms

Women who experience dysmenorrhoea will often describe other associated symptoms. These include nausea, vomiting, general GI discomfort, constipation, headache, backache, fatigue, feeling faint and dizziness.

Premenstrual syndrome

The term PMS describes a collection of symptoms, both physical and mental, whose incidence is related to the menstrual cycle. Symptoms are experienced cyclically, usually from 2 to 14 days before the start of menstruation. Relief from symptoms generally occurs once menstrual bleeding begins. The cyclical nature, timing and reduction in symptoms are all important in identifying PMS. Some women experience such severe symptoms that their working and home lives are affected.

Sufferers often complain of a bloated abdomen, increase in weight, swelling of ankles and fingers, breast tenderness and headaches.

Women who experience PMS describe a variety of mental symptoms that may include any or all of irritability, tension, depression, difficulty in concentrating and tiredness.

If PMS is considered to be a possibility, advising the woman to keep a diary of symptoms recording when they occur and remit is useful, especially if the pharmacist later decides referral is needed.

Treatment of the symptoms of PMS is a matter for debate and there is a high placebo response to therapy of mood changes, breast discomfort and headaches when taken from 2 weeks before the period starts or throughout the cycle. There is some evidence that *pyridoxine* may reduce symptoms but the quality of clinical trials was poor and the evidence thus not definitive. The mechanism of action of *pyridoxine* in PMS is unknown. However, women should be advised to stick to the recommended dose; higher doses of *pyridoxine* are reported to have led to neuritis. The *BNF* (p. 470) states that 'Concerns about possible toxicity resulting from prolonged use of *pyridoxine* at high doses have not yet been resolved.' The Royal Pharmaceutical Society of Great Britain has advised that pharmacists should consider how to advise customers requesting preparations containing higher doses and that they should decide their own policy on the display of products containing more than 10 mg per daily dose of *pyridoxine*. The practical effect of this advice is that pharmacists are likely to ask their customers about the dose of *pyridoxine* they are planning to take.

Evening primrose oil has been used to treat breast tenderness associated with PMS. However, there are no good quality trials to support its use and therefore is of unknown effectiveness. The product licence for *Efamast* was withdrawn in October 2002. The mechanism of action of *evening primrose oil* in such cases is thought to be linked to effects on prostaglandins, particularly in increasing the level of prostaglandin E, which appears to be depleted in some women with PMS. The active component of *evening primrose oil* is *gammalinolenic* (*gamolenic*) *acid*, which is thought to reduce the ratio of saturated to unsaturated fatty acids. The response to hormones and prolactin appears to be reduced by *gammalinolenic acid*.

Medication

The pain of dysmenorrhoea is thought to be linked to increased prostaglandin activity, and raised prostaglandin levels have been found in the menstrual fluids and circulating blood of women who suffer from dysmenorrhoea. Therefore, the use of analgesics that inhibit the synthesis of prostaglandins is logical. It is important, however, for the pharmacist to make sure that the patient is not already taking an NSAID.

Women taking oral contraceptives usually find that the symptoms of dysmenorrhoea are reduced or eliminated altogether, and so any woman presenting with the symptoms of dysmenorrhoea and who is taking the pill is probably best referred to the doctor for further investigation.

When to refer
Presence of abnormal vaginal discharge
Abnormal bleeding
Symptoms suggest secondary dysmenorrhoea
Severe intermenstrual pain (mittelschmerz) and bleeding
Failure of medication
Pain with a late period (possibility of an ectopic pregnancy)
Presence of fever

Treatment timescale

If the pain of primary dysmenorrhoea is not improved after two cycles of treatment, referral to the doctor would be advisable.

Management

Simple explanation about why period pains occur, together with sympathy and reassurance, is important. Treatment with simple analgesics is often very effective in dysmenorrhoea.

Ibuprofen (see also p. 203)

Ibuprofen can be considered the treatment of choice for dysmenorrhoea, providing the drug is appropriate for the patient (i.e. the pharmacist has questioned the patient about previous use of *aspirin*, and history of GI problems and asthma). *Ibuprofen* inhibits the synthesis of prostaglandins and thus has a rationale for use. Most trials have studied the use of NSAIDs at the onset of pain. One small study compared treatment started premenstrually against treatment from onset of pain: both strategies were equally effective. For self-medication, a maximum daily dose of 1200 mg per day is allowed, so women could be advised to try a dose of 200–400 mg three times daily. A variety of proprietary brands of *ibuprofen* is available, in tablet and capsule form, some of which are specifically marketed for period pains. Sustained-release formulations of *ibuprofen* are also available.

Contraindications. Care should be taken when recommending *ibuprofen*. The drug can cause GI irritation and should not be taken by anyone who has or has had a peptic ulcer. All patients should take *ibuprofen* with or after food to minimise GI problems (see also p. 203).

Ibuprofen should not be taken by anyone who is sensitive to *aspirin* and should be used with caution in anyone who is asthmatic, because such patients are more likely to be sensitive to *ibuprofen*. The pharmacist can check if a person with asthma has used *ibuprofen* before. If they have done so without problems, they can continue.

Aspirin

Aspirin also inhibits the synthesis of prostaglandins but is less effective in relieving the symptoms of dysmenorrhoea than *ibuprofen*. One review found the NNT was 10 for *aspirin* compared with 2.4 for *ibuprofen*. *Aspirin* can cause GI upsets and is more irritant to the stomach than *ibuprofen*. For those who experience symptoms of nausea and vomiting with dysmenorrhoea, *aspirin* is probably best avoided. Soluble forms of *aspirin* will work more quickly than traditional tablet formulations and are less likely to cause stomach problems. Patients should be advised to take *aspirin* with or after meals. The pharmacist should establish whether the patient has any history of *aspirin* sensitivity before recommending the drug.

Paracetamol

Paracetamol has little or no effect on the levels of prostaglandins involved in pain and inflammation and so it is theoretically less effective for the treatment of dysmenorrhoea than either *ibuprofen* or *aspirin*. However, *paracetamol* is a useful treatment when the patient cannot take *ibuprofen* or *aspirin* because of stomach problems or potential sensitivity. *Paracetamol* is also useful when the patient is suffering with nausea and vomiting as well as pain, since it does not irritate the stomach. The pharmacist should remember to stress the maximum dose that can be taken.

Hyoscine

Hyoscine, a smooth muscle relaxant, is included in one proprietary product marketed for the treatment of dysmenorrhoea on the theoretical basis that the antispasmodic action will reduce cramping. In fact, the dose is so low (0.1 mg *hyoscine* in some combination formulations) that such an effect is unlikely and the products might be considered to be successful due to its analgesic action and psychological effect. The anticholinergic effects of *hyoscine* mean it is

contraindicated in women with closed-angle glaucoma. Additive anticholinergic effects (dry mouth, constipation, blurred vision) means *hyoscine* is best avoided if any other drug with anticholinergic effects (e.g. tricyclic antidepressants) is being taken.

Caffeine

There is some evidence (from a trial comparing combined *ibuprofen* and *caffeine* with *ibuprofen* alone and *caffeine* alone) that *caffeine* may enhance analgesic effect. OTC products contain 15–65 mg of *caffeine* per tablet. A similar effect could be achieved through drinking tea, coffee or cola. A cup of instant coffee usually contains about 80 mg *caffeine*, a cup of freshly brewed coffee about 130 mg, a cup of tea 50 mg and a can of cola drink about 40–60 mg.

Non-drug treatments

High-frequency transcutaneous electrical nerve stimulation (TENS) may be of benefit. It seems to work by altering the body's ability to receive or perceive pain signals. High-frequency TENS has pulses of 50–120 Hz at low intensity, and when compared with placebo in seven small RCTs was found to be effective for pain relief in primary dysmenorrhoea. Low-frequency TENS is also available and has pulses delivered of 1–4 Hz at high intensity. Although low-frequency TENS was better than placebo the evidence is less convincing than for high frequency.

Acupuncture may be helpful and was found in a small but well-designed study to be more effective than its placebo equivalent (sham acupuncture, where the needles are positioned away from the 'real' acupuncture sites). The treatments were given once a week for 3 weeks per month over a 3-month period. Women receiving 'real' acupuncture gained significant pain relief. While further research is needed to confirm this effect, some women may want to try it.

Locally applied low-level heat may also help pain relief. Results from one study showed that the time to noticeable pain relief was significantly reduced when *ibuprofen* was combined with locally applied heat, as compared with *ibuprofen* alone.

Fish oil (omega-3 fatty acids) compared with placebo in one study showed the use of additional pain relief to be significantly lower in the treatment group. There were significantly more adverse effects in the women treated with fish oil, but these were not serious.

Pyridoxine alone and combined with magnesium showed some benefit in reducing pain, compared with placebo.

Practical points

1 Exercise during menstruation is not harmful, as some 'old wives tales' would have people believe. In fact, exercise may well be beneficial, since it raises endorphin levels, reducing pain and promoting a feeling of well-being. There is some evidence that moderate aerobic exercise can improve symptoms of premenstrual syndrome.

2 There is some evidence that a low-fat, high-carbohydrate diet reduces breast pain and tenderness.

3 PRODIGY gives the following advice to women taking analgesics for dysmenorrhoea:

(i) Take the first dose as soon as your pain begins, or as soon as the bleeding starts, whichever comes first. Some doctors advise to start taking the tablets on the day before your period is due. This may prevent the pain from building up.

(ii) Take the tablets regularly, for 2–3 days each period, rather than 'now and then' when pain builds up.

(iii) Take a strong enough dose. If your pains are not eased, ask your doctor or pharmacist whether the dose that you are taking is the maximum allowed. An increase in dose may be all that you need.

(iv) Side-effects are uncommon if you take an anti-inflammatory for just a few days at a time, during each period. (But read the leaflet that comes with the tablets for a full list of possible side-effects.)

Dysmenorrhoea in practice

Case 1

Linda Bailey is a young woman aged about 26, who asks your advice about painful periods. From your questioning, you find that Linda has lower abdominal pain and sometimes backache, which starts several days before her period begins. Her menstrual cycle used to be very regular, but now tends to vary; sometimes she only has 3 weeks between periods. The pain continues throughout menstruation and is quite severe. She has tried taking *aspirin*, which did not have much effect.

The pharmacist's view

This woman sounds as though she is experiencing secondary dysmenorrhoea. The pain begins well before her period starts and continues during menstruation. Her periods, which used to be regular, are no longer so and she has tried *aspirin* which has not relieved the pain. She should be referred to her doctor.

The doctor's view

Referral does seem appropriate in this situation. Further information needs to be gathered from history-taking (how long overall has she experienced pain, effect on her life, any pregnancies, does she use contraception, any history of pelvic infection, her concerns and ideas about her problem, the sort of help is she expecting, etc.), examination and preliminary investigations. It is quite possible that the patient has endometriosis and referral to a gynaecologist may be indicated.

Case 2

Jenny Simmonds is a young woman aged about 18 who looks rather embarrassed and asks you what would be the best thing for period pains. Jenny tells you that she started her periods about 5 years ago and has never had any problem with period pains until recently. Her periods are regular – every 4 weeks. They have not become heavier, but she now gets pain, which starts a few hours before her period. The pain has usually gone by the end of the first day of menstruation and Jenny has never had any pain during other parts of the cycle. She says she has not tried any medicine yet, is not taking any medicines from the doctor and that she can normally take *aspirin* without any problems.

The pharmacist's view

From the results of questioning it sounds as though Jenny is suffering from straightforward primary dysmenorrhoea. She could be advised to take *ibuprofen* 200–400 mg three times daily. She could be recommended to follow this regimen for 2 months and invited back to see if the treatment has worked.

The doctor's view

Jenny's pain is most likely due to primary dysmenorrhoea. An explanation of this fact would probably be very reassuring. The treatment recommended by the pharmacist is sensible. If her pain was not helped by *ibuprofen*, she could be advised to discuss further management with her GP. Sometimes the combined oral contraceptive pill can be helpful in reducing painful periods.

Vaginal thrush

Women often seek to buy products for feminine itching and may be embarrassed to seek advice or answer what they see as intrusive questions from the pharmacist. Vaginal pessaries, intravaginal creams containing *imidazole* antifungals and oral *fluconazole* are effective treatments. Before making any recommendation it is vital to question the patient to identify the probable cause of the symptoms. Advertising of these treatments direct to the public means that a request for a named product may be made. It is important to confirm its appropriateness.

What you need to know
Age
Child, adult, elderly
Duration
Symptoms
Itch
Soreness
Discharge (colour, consistency, odour)
Dysuria
Dyspareunia
Threadworms
Previous history
Medication

Significance of questions and answers

Age

Vaginal candidiasis (thrush) is common in women of childbearing age, and pregnancy and diabetes are strong predisposing factors. This infection is rare in children and in postmenopausal women because of the different environment in the vagina. In contrast to women of childbearing age, where vaginal pH is generally acidic (low pH) and contains glycogen, the vaginal environment of children and menopausal women tends to be alkaline (high pH) and does not contain large amounts of glycogen.

Oestrogen, present between adolescence and the menopause, leads to the availability of glycogen in the vagina and also contributes to the development of a protective barrier layer on the walls of the vagina. The lack of oestrogen in children and postmenopausal women means this protective barrier is not present, with a consequent increased tendency to bacterial (but not fungal) infection.

In the UK, the Committee on Safety of Medicines (CSM) recommends that women under 16 or over 60 complaining of symptoms of vaginal thrush should be referred to their doctor. Child abuse may be the source of vaginal infection in girls, making referral even more important. Vaginal thrush is rare in older women and other causes of the symptoms need to be excluded.

Duration

Some women delay seeking advice from the pharmacist or doctor because of embarrassment about their symptoms. They may have tried an OTC product or a prescription medicine already (see 'Medication' below).

Symptoms

Itch (pruritus)

Dermatitis. Allergic or irritant dermatitis may be responsible for vaginal itch. It is worth asking whether the patient has recently used any new toiletries (e.g. soaps, bath or shower products). Vaginal deodorants are sometimes the source of allergic reactions. Women sometimes use harsh soaps, antiseptics and vaginal douches in overenthusiastic cleansing of the vagina. Regular washing with warm water is all that is required to keep the vagina clean and to maintain a healthy vaginal environment.

Candidiasis (*thrush*). The itch associated with thrush is often intense and burning in nature. Sometimes the skin may be excoriated and raw from scratching when the itch is severe.

Discharge

In women of childbearing age, the vagina naturally produces a watery discharge and cervical mucus is also produced, which changes consistency at particular times of the menstrual cycle. Such fluids may be watery or slightly thicker, with no associated odour. Some women worry about these natural secretions and think they have an infection.

The most common infective cause of vaginal discharge is candidiasis. Vaginal candidiasis may be (but is not always) associated with a discharge. The discharge is classically cream-coloured, thick and

curdy in appearance, but alternatively may be thin and rather watery. Other vaginal infections may be responsible for producing discharge but are markedly different from that caused by thrush. The discharge associated with candidal infection does not usually produce an unpleasant odour, in contrast to that produced by bacterial infection. Infection leading to discharge described as yellow or greenish is more likely to be bacterial in origin, e.g. bacterial vaginosis, chlamydia or gonorrhoea.

Partner's symptoms

Men may be infected with *Candida* without showing any symptoms. Typical symptoms for men are an irritating rash on the penis, particularly on the glans.

Dysuria (pain on urination)

Dysuria may be present and scratching the skin in response to itching might be responsible, although dysuria may occur without scratching. Sometimes, the pain on passing urine may be mistaken for cystitis by the patient. If a woman complains of cystitis, it is important to ask about other symptoms (see p. 226). The CSM advises that lower abdominal pain or dysuria are indications for referral because of their possible link with kidney infections.

Dyspareunia (painful intercourse)

Painful intercourse may be associated with infection or a sensitivity reaction where the vulval and vaginal areas are involved.

Threadworms

Occasionally, threadworm infestation can lead to vaginal pruritus and this has sometimes occurred in children. The patient would also be experiencing anal itching in such a case. The pharmacist should refer girls under the age of 16 to the doctor in any case of vaginal symptoms.

Previous history

Recurrent thrush is a problem for some women, often following antibiotic treatment (see below). Recurrent infections are defined as 'four or more episodes of symptomatic candidosis annually'. The CSM advice is that any woman who has experienced more than two attacks of thrush during the previous 6 months should be referred to the doctor. Repeated thrush infections may indicate an underlying problem or altered immunity and further investigation is needed.

Pregnancy

During pregnancy almost one in five women will have an episode of vaginal candidiasis. This high incidence has been attributed to hormonal changes with a consequent alteration in the vaginal environment leading to the presence of increased quantities of glycogen. Any pregnant woman with thrush should be referred to the doctor.

Diabetes

It is thought that *Candida* is able to grow more easily in diabetic patients because of the higher glucose levels in blood and tissues. Sometimes recurrent vaginal thrush can be a sign of undiagnosed diabetes or, in a patient who has been diagnosed, of poor diabetic control.

Sexually transmitted diseases (STDs)

In the UK, the CSM insists that women who have previously had a sexually transmitted infection should not be sold OTC treatments for thrush. The thinking behind this ruling is that with a previous history of STD, the current condition may not be thrush or may include a dual infection with another organism.

Pharmacists may be concerned about how patients will respond to personal questions. However, it should be possible to enquire about previous episodes of these or similar symptoms in a tactful way, for example by asking 'Have you ever had anything like this before?' and if 'Yes', 'Tell me about the symptoms. Were they exactly the same as this time?' and about the partner, 'Has your partner mentioned any symptoms recently?'

Oral steroids

Patients taking oral steroids may be at increased risk of candidal infection.

Immunocompromised patients

Patients with HIV or AIDS are prone to recurrent thrush infection because the immune system is unable to combat them. Patients undergoing cancer chemotherapy are also at risk of infection.

Medication

Oral contraceptives

It has been suggested that the OCP is linked to the incidence of vaginal candidiasis; however, oral contraceptives are no longer considered a significant precipitating factor.

Antibiotics

Broad-spectrum antibiotics wipe out the natural bacterial flora (lactobacilli) in the vagina and can predispose to candidal overgrowth. Some women find that an episode of thrush follows every course of antibiotics they take. The doctor may prescribe an antifungal at the same time as the antibiotic in such cases.

Local anaesthetics

Vaginal pruritus may actually be caused by some of the products used to relieve the symptom. Creams and ointments advertised for 'feminine' itching often contain local anaesthetics – a well- known cause of sensitivity reactions. It is important to check what, if any, treatment the patient has tried before seeking your advice.

When to refer

The UK Committee on Safety of Medicines list:

First occurrence of symptoms

Known hypersensitivity to imidazoles or other vaginal antifungal products

Pregnancy or suspected pregnancy

More than two attacks in the previous 6 months

Previous history of STD

Exposure to partner with STD

Patient under 16 or over 60

Abnormal or irregular vaginal bleeding

Any blood staining of vaginal discharge

Vulval or vaginal sores, ulcers or blisters

Associated lower abdominal pain or dysuria

Adverse effects (redness, irritation or swelling associated with treatment)

No improvement within 7 days of treatment

Management

Single-dose intravaginal and oral *azole* preparations are effective in treating vaginal candidiasis and give 80–95% clinical and mycological cure rates. Topical preparations give quicker initial relief, probably due to the vehicle. They may sometimes exacerbate burning sensations in the first few days, and oral treatment may be preferred if the vulva is very inflamed. Oral therapies are effective, but it may be 12–24 h before symptoms improve. Some women find oral treatment more convenient. Patients find single-dose products very convenient and compliance is higher than with treatments involving several days'

use. The patient can be asked whether she prefers a pessary, vaginal cream or oral formulation. Some experts argue that oral antifungals should be reserved for resistant cases. Pharmacists will use their professional judgement together with patient preference in making the decision on treatment.

The pharmacist should make sure that the patient knows how to use the product. An effective way to do this is to show the patient the manufacturer's leaflet instructions. Where external symptoms are also a problem, an *azole* cream (*miconazole* or *clotrimazole*) can be useful in addition to the intravaginal or oral product. The cream should be applied twice daily, morning and night.

The azoles can cause sensitivity reactions but these seem to be rare. However, it is worth checking with the patient whether she has used this type of preparation before and asking about any previous sensitivity problems. Oral *fluconazole* interacts with some drugs:

anticoagulants
oral sulphonylureas
ciclosporin (*cyclosporin*)
phenytoin
rifampicin
theophylline

The effects of single-dose *fluconazole* rather than continuous therapy with the drug in relation to interactions are not clear. Theoretically single-dose use is unlikely to cause problems but pharmacists need to be cautious and take the possibility of interactions into account. There is no evidence that oral treatment is any more effective than topical vaginal preparations. The main difference being their unwanted effects and acceptability to the patient.

Reported side-effects from oral *fluconazole* occur in some 10% of patients and are usually mild and transient. They include nausea, abdominal discomfort, flatulence and diarrhoea. Oral *fluconazole* should not be recommended for nursing mothers because it is excreted in breast milk.

Fenticonazole is a P medicine for topical use in the treatment of vaginal thrush.

Practical points

Privacy

Patients seeking advice about vaginal symptoms may be embarrassed, fearing that their conversation with the pharmacist will be overheard. It is therefore important to try and ensure privacy. Requests for a named product may be an attempt to avoid discussion. However, a careful response is needed to ensure that the product is appropriate.

Treatment of partner

Men may be infected with *Candida* without showing any symptoms. Typical symptoms for men are an irritating rash on the penis, particularly on the glans. While expert opinion is that male partners without symptoms should not be treated, this remains an area of debate. Symptomatic males with candidal balanitis (penile thrush) and whose female partner has vaginal thrush should be treated. An azole cream can be used twice daily on the glans of the penis, applied under the foreskin for 6 days. Oral *fluconazole* can also be used.

'Live' yoghurt

Live yoghurt contains lactobacilli, which are said to alter the vaginal environment, making it more difficult for *Candida* to grow. It has been suggested that women prone to thrush should regularly eat live yoghurt to increase the level of lactobacilli in the gut. However, data are inconclusive as to the effectiveness of *Lactobacillus*-containing yoghurt, administered either orally or vaginally, in either treating or preventing thrush. Direct application of live yoghurt onto the vulval skin and into the vagina on a tampon has been recommended as a treatment for thrush. This process is messy and some women have reported stinging on application, which is not surprising if the skin is excoriated and sore. It is otherwise harmless, although evidence of effectiveness is lacking.

Prevention

Thrush thrives in a warm environment. Women who are prone to attacks of thrush may find that avoiding nylon underwear and tights and using cotton underwear instead may help to prevent future attacks.

The protective lining of the vagina is stripped away by foam baths, soaps and douches and these are best avoided. Vaginal deodorants can themselves cause allergic reactions and should not be used. If the patient wants to use a soap or cleanser, an unperfumed, mild variety is best.

Since *Candida* can be transferred from the bowel when wiping the anus after a bowel movement, wiping from front to back should help to prevent this.

Vaginal thrush in practice

Case 1

Julie Parker telephones your pharmacy to ask for advice because she thinks she might have thrush. She tells you she didn't want to come to

the pharmacy as she was concerned that the conversation might be overheard. When you ask why she thinks she may have thrush she tells you that she was recently prescribed a week's course of *metronidazole*. She had her first baby about 6 months ago and has had some skin irritation following an episiotomy. When she went back to the GP after taking the *metronidazole* she was prescribed a second course of *metronidazole* plus a course of *amoxicillin* for 1 week and a swab was taken. She didn't hear anything further for about 2 weeks until the surgery rang her and asked if she had been told the results of the swab (she hadn't). She was asked to go and collect a prescription from the surgery. She hasn't brought it in yet to be dispensed but it is for a pessary.

The pharmacist's view

This sort of query is difficult to deal with because the pharmacist does not have access to diagnosis or test results. It sounds as though there may have been a communication problem initially and a delay in the test results being dealt with. I would ask what the name of the pessary on the prescription is and then explain what it's used for. I would explain that thrush sometimes happens after a course of antibiotics and that the pessary is likely to cure it.

The GP's view

It would probably be best for Julie Parker to go back and see her GP who has already given her two courses of treatment and taken a swab. She needs to find out exactly what the GP has been treating her for, what the swab result is, and to be able to explain to her GP what her current symptoms are. *Metronidazole* is often prescribed for bacterial vaginosis. It could be that she has also developed thrush especially as she has been taking *amoxycillin*. It is always important for patients to know how and when they can get their results. Often patients understandably assume that if they don't hear from their doctors' surgery, the result is negative or normal. This is potentially dangerous and it is always important for the person taking laboratory samples to explain clearly how and when the results will be available. In this situation it is also important for the prescriber to explain the need for the prescription that has been left out at the surgery.

Case 2

Helen Simpson is a student at the local university. She asks one of your assistants for something to treat thrush and is referred to you. You walk with Helen to a quiet area of the shop where your conversation will not be overheard. Initially, Helen is resistant to your involvement,

asking why you need to ask all these personal questions. After you have explained that you are required to obtain information before selling these products and that, in any case, you need to be sure that the problem is thrush and not a different infection, she seems happier.

She has not had thrush or any similar symptoms before but described her symptoms to a flatmate who made the diagnosis. The worst symptom is itching, which was particularly severe last night. Helen has noticed small quantities of a cream-coloured discharge. The vulval skin is sore and red. Helen has a boyfriend, but he hasn't had any symptoms. She is not taking any medicines and does not have any existing illnesses or conditions. Since arriving at the university a few months ago she has not registered with the university's health centre and has therefore come to the pharmacy hoping to buy a treatment.

The pharmacists view

The key symptoms of itch and cream-coloured vaginal discharge make thrush the most likely candidate here. Helen has no previous history of the condition and, unfortunately, the regulations preclude the recommendation of an intravaginal azole product or oral *fluconazole* in such a case. An azole cream would help to ease the itching and soreness of the vulval skin. As her boyfriend is not experiencing symptoms he does not need treatment. However, because external treatment alone is unlikely to prove effective in eradicating the infection, it would be best for Helen to see a doctor.

She would be well advised to register at the university health centre. You can explain to her that she can seek treatment on a temporary resident basis but that it would be best to get proper medical cover.

The doctor's view

The history is very suggestive of thrush and treatment should include an appropriate intravaginal preparation. The case history highlights some of the difficulties of asking personal questions about genitalia and sexual activity. These difficulties are also likely to occur in the doctor's surgery. It is important for the doctor to carefully explore the patient's ideas, understanding, concerns and preconceptions of her condition. Many doctors would prescribe without an examination with such a clear history and only examine and take appropriate microbiology samples if treatment fails.

Emergency hormonal contraception

Dealing with requests for emergency hormonal contraception (EHC) requires sensitive interpersonal skills from the pharmacist. Enabling privacy for the consultation is essential and up to 25% of women who have obtained EHC from the pharmacy had concerns about privacy. Careful thought needs to be given to the wording of questions. Research has shown that about 20% of women will go to a pharmacy other than their regular one because they want to remain anonymous. Some pharmacists will decide not to make EHC available for sale in their pharmacy.

What you need to know
Age
Why EHC is needed – confirmation that unprotected sex or contraceptive failure has occurred
When unprotected sex/contraceptive failure occurred
Could the woman already be pregnant?
Other medicines being taken

Significance of questions and answers

Age

EHC can be supplied OTC as a P medicine for women aged 16 and over. For women under 16 the pharmacist can refer to the doctor or family planning service. In the NHS, EHC may be supplied under PGDs according to a locally agreed protocol. Some of these schemes include community pharmacies and if the PGD so states, supply can be made to a woman under 16.

Why EHC is needed

The most common reasons for EHC to be requested are failure of a barrier contraceptive method (e.g. condom that splits), missed contraceptive pill/s, and no contraception used. In the case of missed pills the pharmacist should follow the guidance of the Faculty of Family Planning and Reproductive Health Care Clinical Effectiveness Unit

(*Emergency Contraception: Recommendations for Clinical Practice. Guidance*, April 2003 at www.ffprhc.org.uk).

Combined pills:

Two or more pills missed from the first seven pills in a packet, or
Four or more pills missed midpacket

If two or more combined pills are missed from the last seven pills in a packet, emergency contraception is not necessary providing that the pill-free break is omitted, i.e. the woman starts her next packet of pills the day after finishing the current packet.

Progestogen-only pills:

One or more pills taken more than 3 h after usual pill-taking time, or missed.

When unprotected sex/contraceptive failure occurred

EHC needs to be started within 72 h of unprotected intercourse. The sooner it is started, the higher is its efficacy. If unprotected sex took place between 72 h and 5 days ago the woman can be referred to have an intrauterine device (IUD) fitted as a method of emergency contraception.

Requests are sometimes made for EHC to be purchased for use in the future (advance requests, for example, to take on holiday just in case). This would be an indication for referral as the pharmacist can only recommend use of EHC based on sufficient information to decide that its use is needed.

Could the woman already be pregnant?

Any other episodes of unprotected sex in the current cycle are important. Ask whether the last menstrual period was lighter or later than usual. If in doubt, the pharmacist can suggest that the woman has a pregnancy test. EHC will not work if the woman is pregnant. There is no evidence that EHC is harmful to the pregnancy.

Other medicines being taken

Medicines that induce specific liver enzymes have the potential to increase the metabolism of *levonorgestrel* and thus to reduce its efficacy. Women taking the following medicines should be referred to an alternative source of supply of EHC:

Anticonvulsants (*carbamazepine*, *phenytoin*, *primidone*, *phenobarbital* (*phenobarbitone*))
Rifampicin and *rifabutin*
Griseofulvin

Ritonavir

St John's wort.

There is an interaction between *ciclosporin* and *levonorgestrel*. Here, the progestogen inhibits the metabolism of *ciclosporin* and increasing levels of the latter. A woman requesting EHC who is taking *ciclosporin* should be referred.

Treatment timescale:

EHC must be started within 72 h of unprotected intercourse.

When to refer
Age under 16
Longer than 72 h since unprotected sex
Taking a medicine that interacts with EHC
Requests for future use

Management

Dosage

Levonorgestrel EHC is taken as a single dose of 1500 μg as soon as possible after unprotected intercourse, preferably within 12 hours and not later than 72 hours after unprotected intercourse. A 1500 μg tablet is available as an OTC product.

Side-effects

The most likely side-effect is nausea, which occurred in about 23% of women during clinical trials of *levonorgestrel* EHC. Far fewer women (6%) actually vomited. Although the likelihood of vomiting is small, absorption of *levonorgestrel* could be affected if vomiting occurs within 3 h of taking the tablet. Another dose is needed as soon as possible.

Women who should not take EHC

The product licence for the P medicine states that it should not be taken by a woman who is pregnant (because it will not work); has severe hepatic dysfunction; or has severe malabsorption (e.g. Crohn's disease).

Advice to give when supplying EHC

1 Take the dose as soon as possible.

2 About one in four women feel sick after taking *levonorgestrel* EHC but only five in every 100 are actually sick.

3 If the woman is sick within 3 h of taking the dose, she should obtain a further supply as soon as possible.

4 The next period may start earlier, on time or later than usual. If it is lighter, shorter or more than 3 days later than usual, the woman should see her doctor or family planning adviser to have a pregnancy test.

5 If the woman takes the OCP, she and her partner should use condoms in addition to continuing the pill, until she has taken it for 7 consecutive days.

6 EHC does not equate to ongoing contraception, nor does it offer protection against STD. Give verbal and written information about the importance of using condoms to prevent sexually transmitted infections.

Practical points

1 A PGD is available in many areas for pharmacists to supply EHC on the NHS. The PGD was introduced to enable quicker access for EHC to women who are not covered by the OTC product licence (e.g. those under 16) and to overcome the difficulties faced by some women in relation to the cost of OTC EHC (currently around £25). Pharmacists supplying under a PGD undertake additional training, follow a closely defined protocol and keep records of their supplies.

2 Pharmacists need to know local sources of family planning services and their opening hours so that they can refer if, for some reason, it is not appropriate for the P EHC to be supplied. Knowledge of local services is also important for advice to women who may wish to obtain regular contraception and information about STDs.

3 EHC can be used on more than one occasion within the same menstrual cycle but this is likely to disrupt the cycle. There are no safety concerns about repeated use of EHC but a woman doing so would find it difficult to keep track of her cycle because of the changes EHC can cause. Some women may believe that repeated courses of EHC are a substitute for other contraceptive methods. EHC used in this way is less effective than other methods of contraception and the risk of becoming pregnant is higher.

4 An open learning booklet on EHC produced by the NHS Centre for Pharmacy Postgraduate Education is available on their website www.cppe.man.ac.uk.

EHC in practice

Case 1

A customer whom you recognise as a regular comes into the pharmacy and asks to speak to the pharmacist. She says she thinks she needs EHC and you move to a quiet area of the pharmacy. On questioning, you find out that she takes the progesterone-only pill but was away from home on business earlier this week and missed one pill, as she forgot to take them with her. The packet says that other contraception will be needed for 7 days. She had sex last night and says she had not had the chance to get any condoms. She is not taking any medicines other than the pill, and is not taking any herbal remedies. Her last period was normal and there have been no other episodes of unprotected sex.

The pharmacist's view

Many of the women who request EHC are aged between 20 and 30 and are regular users of contraception but something has gone wrong. This woman needs to take EHC and the pharmacist can go through the PIL with her to advise on what to do about side-effects should they occur. The pharmacist can also sell condoms/spermicide and reinforce the advice about continuing other contraceptive methods until the pill has been taken for 7 consecutive days as well as taking her progestogen-only pill.

The doctor's view

The pharmacist's approach is appropriate.

Case 2

It is a Saturday afternoon about 4.30 PM. A young woman comes into your pharmacy, asks your counter assistant for EHC and is referred to you. You move to a quiet area of the pharmacy and in response to your questions she tells you that she had intercourse with her boyfriend last night for the first time. No contraception was used. She is not taking any medicines or herbal remedies. Her periods are fairly regular about every 30 days. You think the woman may be under 16.

The pharmacist's view

This woman had unprotected sex 12–18 h ago. If she is under 16, the use of P EHC would be outside the terms of the product licence and the pharmacist could ask her age. Some pharmacies can supply EHC on the NHS to under-16s through a PGD. If the area does not have a PGD the pharmacist will have to consider what other methods of

access are available. A Walk-in Centre or GP out-of-hours centre might be available. If all other avenues proved unfeasible, the pharmacist might have to weigh the benefits and risks of referral versus supplying outside the terms of the OTC licence. While there is time for it to be started within 72 h of unprotected sex, the earlier EHC is taken, the more likely it is to be effective. The pharmacist should tactfully suggest that she could get advice on regular contraception and discuss whether she would prefer to get this from her GP or local family planning service.

The doctor's view

Referral does depend on her age, which can be difficult to assess, and whether or not there is a local PGD. One of the problems here is the day and time of presentation. It is unlikely that the local family planning service would be open late on a Saturday. She could wait until Monday but that would be getting close to the 72 h deadline. Clearly it would be better to take the EHC as soon as possible. Her best option would be to phone the on-call GP service. This could probably be done in the pharmacy and she could discuss what to do with the duty GP or nurse. If she turns out to be under age the GP has the duty to encourage her to discuss this with her parents. If she didn't want to do this and the GP were satisfied with her emotional maturity, she could be reassured of confidentiality.

Case 3

A woman asking for EHC is referred to you. She thinks she may be pregnant as she takes the combined OCP and missed one pill 2 days ago, during the first week of the packet. She had sex last night. Her last period was normal.

The pharmacist's view

The Faculty of Family Planning guidelines state that EHC is not needed unless the woman has missed two or more pills during the first week of taking it. The woman should use an additional contraceptive method such as condoms until pills have been taken on 7 consecutive days. The pharmacist should discuss this with the woman. If she continues to be concerned and still wants to take EHC, the pharmacist could supply it as there are no safety concerns. The timing of the next period may be disrupted. The pharmacist should also suggest that she buys some condoms and spermicide.

The doctor's view

The pharmacist's advice is appropriate.

Common symptoms in pregnancy

Constipation (see p. 105)

Constipation can occur in pregnancy because of the effect of hormonal changes. These changes reduce the contractility of the intestines slowing down the transit of waste products. This in turn allows more fluid to be extracted through the bowel wall drying and hardening the faecal matter. Some women are also taking oral iron preparations for anaemia, which can aggravate constipation. It makes sense to try to prevent this problem by attention to diet (fruit, vegetables and wholegrain cereal, lentils and pulses) and adequate fluid intake. If the constipation is aggravated by iron tablets, it may be worthwhile discussing a change of preparation with the GP.

Haemorrhoids (see p. 132)

Haemorrhoids can be aggravated by constipation, and in pregnancy relaxation of the muscles in the anal veins can lead to dilation and swelling of the veins (haemorrhoids or piles). The venous dilatation occurs under the influence of the pregnancy hormones. Later in pregnancy, as the baby's head pushes down into the pelvis, further pressure is exerted on these veins aggravating piles.

In the management of haemorrhoids it is important to avoid constipation, take regular exercise to improve circulation, avoid standing for long periods and discuss with the pharmacist, midwife or GP an appropriate OTC treatment.

Backache

As pregnancy progresses the ligaments of the lower back and pelvis become softer and stretch. Posture also changes leading to an increased forward curve in the lumbar (lower) spine, which is called a lordosis. The change in the ligaments and the lordosis can lead to low backache.

Common sense techniques avoiding heavy lifting, awkward bending and twisting are advisable, as is a good supportive mattress. Further help may be gained from an obstetric physiotherapist and chiropractor or osteopath.

Cystitis (see p. 226; reason for referral)

Increased frequency of urination is common in pregnancy and, although inconvenient, is unimportant. When it is associated with any

signs of cystitis such as discomfort on urination, discoloration or offensive smell of urine, referral to the GP is important. When cystitis occurs in pregnancy, the infection can move upwards from the bladder to the kidneys causing a much more serious infection. If there is any doubt about cystitis being present, it is important to have the urine sent for analysis.

Headache

Headaches can be a common problem for some women in pregnancy. It is best to have a balance of exercise, rest and relaxation. Occasional *paracetamol* can be taken but it is generally best to avoid medication during pregnancy. Occasionally persistent or severe headaches are due to raised blood pressure. It is important to get the midwife or GP to check for this.

Heartburn (see p. 74)

Heartburn is caused by the relaxation of the muscles in the lower oesophagus allowing the acid stomach contents to regurgitate upwards. This acid reflux causes inflammation of the oesophagus and heartburn. It is aggravated as pregnancy progresses by pressure on the stomach from the growing baby. It can be reduced by raising the head of the bed, eating small meals and not eating prior to going to bed. A glass of milk may help. If treatment is to be recommended, the pharmacist will need to consider the sodium content and avoid any medicine with a high sodium level.

Nausea/vomiting (morning sickness)

Nausea and vomiting is very common, especially in early pregnancy: nausea affects 70% and vomiting 60%. It is sometimes misleadingly called morning sickness as it actually can occur anytime during the day. Vomiting ceases by the 16th week in 90% of women. It may be caused by the change in hormone levels. It is important to take plenty of rest and get up in the mornings slowly, drink plenty of fluids, avoid food and smells that aggravate, and eat bland foods. Ginger may be helpful. There are some trials which suggest that ginger reduces nausea and vomiting but they all involve small numbers of people. One crossover trial assessed 27 women with severe nausea during pregnancy. Women were given ginger 250 g four times daily or placebo for 4 days. Nausea was significantly reduced in the ginger group compared to the placebo one. The evidence for P6 acupressure is at present inconclusive, with some trials showing benefit and others that it is less effective than placebo. A recent trial suggests that acupuncture is effective although the numbers involved were too small to draw firm conclusions.

Vaginal discharge

Vaginal discharge occurs in most women during pregnancy. Providing the discharge is clear and white and non-offensive, it is a normal response to pregnancy. If, however, the discharge has an unpleasant odour, is coloured or is associated with symptoms such as soreness or irritation, referral to the midwife or GP is advised. The most common infection is thrush and is usually managed with topical and intravaginal azoles.

Irritation

Mild skin irritation is common in pregnancy. It is caused by increased blood flow to the skin and by the stretching of the abdominal skin. Wearing loose clothing may help as may perhaps the use of an emollient/moisturising cream. Rarely if the itching is severe, a more serious cause may be revealed, i.e. obstetric cholestasis. This condition may be associated with jaundice and can have a deleterious effect on the baby. It is important to refer patients who complain of severe itching.

Eye and Ear Problems

Eye problems: the painful red eye

Conjunctivitis is one cause of a painful red eye. There are other serious causes of painful red eyes and there are several causes of conjunctivitis. Accurate diagnosis of these causes is of vital importance and requires medical knowledge and skills. Referral is therefore essential. Notes on some of the causes of painful red eyes are provided below.

What you should know

Causes of painful red eye:
Conjunctivitis
  Infective
  Allergic
Corneal ulcers
  Kearatitis
Other causes:
  Iritis/uveitis
  Glaucoma
One or both eyes affected?
What is the appearance of the eye?
What are the symptoms – pain, gritty feeling, photophobia?
Is vision affected?
Any discharge from the eye/s – purulent, watery?
Does the patient wear contact lenses?

Significance of questions and answers

Conjunctivitis

The term conjunctivitis implies inflammation of the conjunctiva, which is a transparent surface covering the white of the eye. It can become inflamed due to infection, allergy or irritation.

Infective conjunctivitis

Both bacteria and viruses can cause conjunctivitis. The symptoms are a painful gritty sensation and a discharge. The discharge is sticky and purulent in bacterial infections and more watery in viral infections. It nearly always affects both eyes. Conjunctivitis occurring in only one

eye suggests the possible presence of a foreign body or another condition accounting for the red eye.

Other conditions with similar symptoms

Management. Infective conjunctivitis is treated with antibacterial eye drops and ointment. Both bacterial and viral infections are treated in the same way. In viral infections the drops will prevent secondary infections. Quite often it is difficult to differentiate between the two types of infection and it is safer to assume that it may be bacterial. A typical course of treatment would be to use *chloramphenicol eye drops* every 2 h for the first 24 h and then four times daily, with *chloramphenicol eye ointment* applied at night for the following week. *Chloramphenicol* is currently a POM but in some parts of the country it is supplied by community pharmacists through a PGD.

Allergic conjunctivitis

This produces irritation, discomfort and a watery discharge. It typically occurs in the hay fever season. It is sometimes difficult to differentiate between infection and allergy and therefore referral is important if there is any doubt.

Management. In seasonal allergic conjunctivitis, decongestant and antihistamine drops can be helpful and *sodium cromoglicate* (*sodium cromoglycate*) eye drops is an effective, safe treatment. Mast cell stabilisers help to prevent the onset of allergic reactions by blocking the attachment of immunoglobulin/allergen complexes to mast cells. They do not provide the rapidity of relief associated with topical antihistamines but are effective when used for longer periods of time. In recurrent seasonal allergies it is appropriate to use a mast cell stabiliser for 4 weeks before the start of an allergy season.

If there is prolonged exposure to allergens in perennial allergic conjunctivitis, then the continued use of a topical antihistamine becomes inappropriate and it is better to recommend drops containing a mast cell stabiliser such as *nedocromil*, *lodoxamide* or *sodium cromoglicate*. *Nedocromil* and *lodoxamide* are both POMs but *sodium cromoglicate* 2% eye drops can be recommended OTC for the treatment of both seasonal and perennial allergic conjunctivitis. A number of proprietary brands are available. Warn patients that they might experience a mild transient burning or stinging sensation after administering these products.

A more chronic form of allergic conjunctivitis is called vernal keratoconjunctivitis. It usually occurs in atopic individuals. It is an

important diagnosis to make, as untreated it can lead to corneal scarring. It would normally be managed by an ophthalmologist. Steroid drops may be used in the management of more severe cases.

Blepharitis may present with similar symptoms to allergic conjunctivitis. However, it is often the case that pruritis (itching) is less prominent with blepharitis. This is also the case with dry eye syndrome (keratoconjunctivitis sicca). Blepharitis is an infection along the lid margin. Its management usually requires removal of the crusty matter from between the lashes with a cotton wool bud.

Corneal ulcers

These may be due to an infection or a traumatic abrasion. The main symptom is that of pain. There may be surrounding conjunctival inflammation. An abrasion can be caused by wearing contact lenses. Early diagnosis is important as the cornea can become permanently scarred, with loss of sight. If a corneal ulcer is suspected, the eye is examined after instilling *fluorescein drops*, which will colour and highlight an otherwise invisible ulcer. The cornea is the transparent covering over the front of the eye and early ulcers are not visible.

Keratitis (inflammation or infection of the cornea) often presents with a unilateral, acutely painful red eye and the patient complaining of photophobia. It may be caused by HSV or occasionally, a bacterial infection. *Acanthamoeba keratitis* is commoner in soft contact lens wearers and is associated with poor lens hygiene, extended wear and swimming whilst wearing lenses. Both these conditions need to be referred.

Management. This is obviously determined by the cause of the ulcer. Specialist referral is invariably required.

Other causes

Iritis/uveitis

Iritis is inflammation of the iris and surrounding structures. It may occur in association with some forms of arthritis, sarcoidosis or TB. It may occur as an isolated event with no obvious cause. The inflammation causes pain, which is felt more within the eye than the superficial gritty pain of conjunctivitis, and there is no discharge. The affected eye is red, the pupil small and possibly irregular. Urgent specialist referral is necessary for accurate diagnosis. Treatment is with topical steroids to reduce inflammation.

Glaucoma

Glaucoma occurs when the pressure of the fluids within the eye becomes abnormally high. This may either happen suddenly or

develop slowly and insidiously; two different abnormalities are involved. It is the sudden onset type (acute closed-angle glaucoma) that causes a painful red eye. Emergency hospital referral is necessary in order to prevent permanent loss of sight. The pain of acute glaucoma is severe and may be felt in and around the eye. There may be associated vomiting. As the pressure builds up the cornea swells, becoming hazy, causing impaired vision and a halo appearance around lights. Treatment involves an operation to lower the pressure to prevent it from developing again. Acute closed-angle glaucoma is rare, whereas 2% of people over 40 suffer from primary open-angle glaucoma (chronic simple glaucoma). This condition starts slowly and insidiously, without warning symptoms. As the intraoccular pressure builds up, the optic nerve is damaged, which leads to loss of visual field, and blindness if not treated. Chronic glaucoma can be detected by an examination at the optician. Regular check-ups are advised if there is a family history of glaucoma, especially in those over 40.

Contact lenses

There are two main types of lens: hard (gas-permeable) and soft (hydrogel). Soft lenses are the most popular because of their comfort. One-day disposable lenses, which are worn once and require no maintenance or storage, are becoming increasingly popular. However, this can lead to patients keeping lenses in for longer periods of time. Extended wear involves much greater risks and increases the chances of complications such as ulcerative keratitis, *Acanthamoeba keratitis* and papillary conjunctivitis.

Contact lenses should not be worn if the patient has conjunctivitis or is using eye drops. Soft contact lenses can absorb the preservative benzalkonium chloride used in eye drops. Consequently, soft lenses should not be worn within 24 h of instilling eye drops containing this preservative.

Eye problems in practice

Paul Greet is a man in his forties who comes into your pharmacy on his way home from work wanting treatment for a stye. He asks to speak to the pharmacist. It is Friday night and you are just about to close. Your pharmacy is in the city centre. He asks if you would make him an emergency supply of *chloramphenicol eye ointment*, which his doctor usually prescribes for him. What would you do?

Pharmacist's view

This sort of dilemma sometimes happens. Unless this man's GP surgery is open in the morning, he will not be able to get a prescription

until Monday, by which time his stye may have worsened. In areas where community pharmacies can supply *chloramphenicol eye ointment* though a PGD, the pharmacist can, following a protocol, supply treatment where appropriate. In areas that have an NHS Walk-In Centre, he could be directed there for treatment. If his surgery is open for emergencies in the morning, he could be seen then. If none of these apply, he could be advised to go to casualty or to call his GP out-of-hours service.

As for making an emergency supply, it is up to the pharmacist to decide whether this constitutes an emergency, which requires the pharmacist to satisfy himself or herself that 'there is an immediate need for the POM requested to be sold or supplied and it is impracticable in the circumstances to obtain a prescription without undue delay'. Patients' and pharmacists' views of what constitutes an emergency do not always coincide. A possible framework for making such decisions is shown below.

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/ not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?

However, the pharmacist will take into account the consequences of not making a supply, including suffering and any potential harm from delayed treatment. If, in the pharmacist's view, the circumstances

constitute an emergency, the requirements for emergency supplies are set out in *Medicines, Ethics and Practice* (Royal Pharmaceutical Society of Great Britain, 2003).

The doctor's view

Most styes are self-limiting. A stye can be an external one: a localised infection of the hair follicles of the eyelid margin; or an internal stye: an infection of meibomian glands on the inner surface of the lid. *Staphylococcus aureus* is the infection responsible in nearly all cases. If left untreated, the stye will point and discharge and resolve spontaneously. The stye can be encouraged to point by the regular application of heat. A way of doing this would be to dip a cotton wool bud in hot water and then gently press it against the stye. Often *chloramphenicol ointment* is prescribed more to protect the eye from any discharge rather than actually treat the stye. It would probably help Paul Greet to understand the natural course of styes, although if he has used *chloramphenicol ointment* in the past, he is likely not to be happy without a further supply this time. It would be useful for his GP to review him as the styes have been recurrent. Sometimes recurrent styes can be associated with blepharitis, diabetes or raised lipids.

If there is inflammation surrounding the stye on the eyelid, then this would be a reason for referral to the GP, as systemic antibiotics may be indicated. Very occasionally styes need incision and drainage to speed up their resolution.

Common ear problems

Although the treatment of common ear problems is straightforward, it does depend upon accurate diagnosis and may require a prescription. It is not always possible to determine the problem from the story. A key issue for the pharmacist is the potential risk from not examining the inside of the ear and seeing how the ear looks. Diagnosis is thus best made by the doctor, who can examine the ear with an auriscope or otoscope. Referral to the doctor is therefore advisable for ear problems. Ear problems that commonly present are described below.

What you need to know
Wax
Otitis externa
Otitis media
Glue ear
One or both ears affected?
Symptoms – pain, itching
Is there any hearing loss?

Significance of questions and answers

Wax

Symptoms

Wax blocking the ear is one of the commonest causes of temporary deafness. It may also cause discomfort and a sensation that the ear is blocked.

Management

Ear drops. The ear can be unblocked by using ear drops such as olive oil and various proprietary drops. The drops should be warmed before use (ideally to body temperature). With the head inclined, five drops should be instilled. A cotton wool plug should be applied to retain the fluid and be kept in for at least 1 h or overnight. This procedure should be repeated at least twice a day for 3 days. The use of these drops can worsen the deafness initially and appropriate warning should be

given. Cotton wool buds should not be poked into the ear as wax is just pushed further in and it is possible to damage the eardrum.

Syringing ears. If any wax remains despite this treatment, referral to the doctor is advisable so that the wax can be considered for syringing. Syringing is now less frequently used than it used to be. One of the problems of syringing can be to trigger an infection (otitis externa). The use of drops to soften the wax prior to syringing the ears is recommended to make the procedure more effective.

Otitis externa

Otitis externa (OE) involves inflammation and infection of the skin in the ear canal (meatus). One in ten people experience it at some time in their life. OE may be localised or diffuse. In the former (due to a furuncle or boil), the main symptom is ear pain and in the latter, a combination of some or all of pain, itching, hearing loss and discharge. Sometimes it is a site of eczema, which may become secondarily infected.

OE can be precipitated by ear trauma (scratching, foreign bodies, use of cotton buds); swimming (especially in polluted water); chemicals (hairspray, hair dyes, shampoo, ceruminolytics); ear syringing; and skin conditions (eczema, seborrhoeic dermatitis, psoriasis). OE is five times more common in swimmers than in non-swimmers. It is more frequent in hot and humid environments and is ten times more common in summer than winter.

Symptoms

The symptoms of OE are usually pain and discharge. Referral to the doctor may be necessary for accurate diagnosis. It is possible that the same symptoms can arise from a middle ear infection (otitis media) with a perforated eardrum. In such a situation, which usually involves a child, the middle ear infection is likely to be associated with a URTI. As the middle ear infection develops, so does the pain. It is often intense and remains so until the drum perforates alleviating the pressure and pain and leading to a discharge.

Management

A good history is essential including questions about any previous OE and recent foreign travel (association with swimming pools). Patients with OE should be referred to their local surgery, where they may be seen by a GP or a nurse. Some surgeries have a policy of taking a swab to enable treatment with an to which the responsible bacterium is sensitive, rather than treating on a trial-and-error basis, which may

lengthen time to healing. Thorough cleansing of the external ear canal is needed in many cases of OE. This is performed under direct vision using microsuction or with a probe covered with cotton wool.

Acute localised otitis externa

Acute localised OE is caused by a boil in the outer third of the external auditory meatus. If there is spreading cellulitis associated, then systemic antibiotics should be started and *flucloxacillin* would be the treatment of choice. Regular analgesics help and effective pain relief can be achieved using *paracetamol*. This can be combined with *codeine* when the pain is more severe, although the evidence of benefit is not definitive. Applying heat by holding a hot flannel against the ear can help to relieve pain.

Diffuse otitis externa

Approximately 90% of diffuse OE cases are bacterial. *Pseudomonas* infections account for two-thirds and staphylococcal are the next most common. The remaining 10% of infections are fungal and *Aspergillus* is the most common form. Acetic acid solution or an antibacterial/corticosteroid combination is effective. There has been a recent study which suggests that ear drops containing corticosteroids are more effective than acetic acid drops, and that steroid and acetic acid or steroid and antibiotic drops are equally effective. Acetic acid 2% solution (*EarCalm spray*) has both antibacterial and antifungal effects and works by increasing the acidity of the ear canal, making it more difficult for pathogens to grow. It can be purchased OTC at the pharmacy. The spray must be primed before use by pressing the actuator up and down until a fine mist is seen. The nozzle is then placed into the ear and pressed once to deliver the correct dose.

For people who are prone to recurrent OE the following advice is helpful:

- Try not to let soap or shampoo get into your ear canal. While having a shower, you can do this by placing a piece of cotton wool coated in soft white paraffin (e.g. Vaseline) in the outer ear.
- Silicone rubber earplugs may be helpful to keep the ears dry whilst you swim.
- Do not use corners of towels or cotton buds to dry any water that does get in the ear canal. This will push things further in. Let it dry naturally.
- Try not to scratch or poke the ear canal with fingers, cotton wool buds, towels, etc.

• Do not clean the ear canal with cotton buds. They may scratch and irritate, and push wax or dirt further into the ear. The ear cleans itself, and bits of wax will fall out now and then.

Otitis media

Otitis media is an infection of the middle ear compartment. The middle ear lies between the outer ear canal and the inner ear. Between the outer ear and the middle is the eardrum (tympanic membrane). The middle ear is normally an air-containing compartment that is sealed from the outside apart from a small tube (the Eustachian tube), which connects to the back of the throat. Within the middle ear are tiny bones that transmit the sound wave vibrations of the eardrum to the inner ear.

An infection typically starts with a common cold, especially in children, which leads to blockage of the Eustachian tube and fluid formation within the middle ear. The fluid can then be secondarily infected by a bacterial infection.

Symptoms

The symptoms of otitis media are pain and temporary deafness. Sometimes the infection takes off so quickly that the eardrum perforates, releasing the infected fluid. When this occurs, a discharge will also be present and be associated with considerable lessening of pain.

As with OE, referral is usually necessary so that the eardrum can be examined. Treatment may involve a course of oral antibiotics (e.g. *amoxicillin* (*amoxycillin*), penicillin or *erythromycin*). However, the use of antibiotics is increasingly being questioned. It appears that many cases of otitis media settle spontaneously and the effect of taking antibiotics possibly only provides some benefit in symptoms after the first 24 h when symptoms are already resolving. A meta-analysis of the research done on the value of antibiotics shows the number needed to successfully treat one patient is seven. In other words, six of every seven children treated for otitis media do not need antibiotics or show no response to them. Pharmacists can explain this to parents. Other concerns with the use of antibiotics are increasing bacterial resistance and adverse effects such as diarrhoea, which occurs in about 10% of cases. A recent research paper suggests that it would be reasonable to delay starting antibiotics for 72h and only starting if symptoms persist at that time. Sometimes topical or oral decongestants are used in addition to antibiotics. These can be useful if air travel is to be undertaken after such an infection. If the Eustachian tube is still blocked during a flight, pain can be experienced due to the change in air pressure. Decongestants would make this less likely.

Glue ear

Some children who are subject to recurrent otitis media develop glue ear. This occurs because the fluid that forms in the middle ear does not drain out completely. The fluid becomes tenacious and sticky. One method of dealing with this common problem is a minor operation in which the fluid is sucked out through the eardrum. After this it is usual to insert a small grommet into the hole in the drum. The grommet has a small hole in the middle, which allows any further fluid forming to drain from the middle ear. The grommet normally falls out within a few months and the small hole in the drum closes over. The longer-term effectiveness of this procedure is debatable.

Earplugs. Some children are advised not to get water into the ear after the insertion of a grommet. One method is to use earplugs that can be purchased in the pharmacy. However, this is often unnecessary and bathing and swimming can be undertaken without using plugs, although it is sensible to avoid deep diving as water may enter the middle ear under pressure, which will impair hearing and may predispose to infection.

Ear problems in practice

Kate Moorhouse is a woman in her twenties. She and her parents have been regular customers for years and you know she recently went to Kenya on holiday. It is Saturday afternoon and Kate tells you that her ear problem has returned. She has had antibiotics to treat it on four previous occasions during the last 3 years. She tells you she recognises the signs. Her face started to swell this morning. Her outer ear now feels swollen and her jaw is painful when she moves it. She knows from experience that if she can take some antibiotics within 24 h, the ear infection will not be so bad. In the past the doctor has had trouble inserting the otoscope because the inside of her ear had been so swollen and painful. The problem causes a feeling of intense pressure inside the ear and she then has a discharge from the ear, which seems to ease the pain. When you check your PMR, you find that you have dispensed four courses of *erythromycin* for Kate in the last 3 years.

The pharmacist's view

It is typical that a problem like this happens on a Saturday afternoon when it is less easy to refer to the doctor. I could send Kate to the Walk-In Centre (if there is one) or to A&E. Using the framework from the previous example, I can think about possible actions I could take. There is no way I would consider leaving Kate to see the doctor on Monday.

Potential harm to patient from not supplying	Potential harm to patient from supplying	Potential benefit to patient from supplying	Consequences for pharmacist of supplying/ not supplying	What would I do if the patient were me/my spouse/my parent/my child? Is this decision different from the one I have reached for the patient? Why?

The doctor's view

Kate needs referral to the emergency on-call GP service, or failing that, to the local A&E department. It sounds like she has recurrent OE with cellulitis. She is likely to need high-dose antibiotic treatment. If she were systemically ill with this and the cellulitis were spreading, she would require IV antibiotics as an inpatient. As this is her fifth episode in the last 3 years, she would need some follow-up, possibly with an ENT surgeon. If on resolution of this infection there were exudate and debris present in the outer ear canal, she could benefit from cleaning of the ear using microsuction. This would reduce the possibility of recurrence. She might also benefit from using an acetic acid spray, especially when she has been on holiday or swimming. There is evidence that this reduces recurrence.

Childhood Conditions

Childhood problems understandably create significant parental anxiety. This can affect the interchange with the pharmacist. If the pharmacist has children, this will be well understood. Whether the pharmacist is confident about childhood problems or not the most important method of dealing with this is to listen well, not just to the presenting complaints but also to the specific concerns of the parent. Sometimes people will be more open with their concerns and sometimes it will be necessary to ask them about their concerns more than once. Just sharing a concern can literally diminish the perceived problem and make the rest of the consultation with the pharmacist more effective.

Common childhood rashes

Most childhood rashes are associated with self-limiting viral infections. Some of these rashes fit well-described clinical pictures (e.g. measles) and are described below. Others are more difficult to label. They may appear as short-lived fine flat (macular) or slightly raised (papular) red spots, often on the trunk. The spots blanch with pressure (erythematous). There is usually associated cold, cough and raised temperature. These relatively minor illnesses occur in the first few years of life and settle without treatment. Any rash in early childhood, particularly during the first year, can be alarming and frightening for parents. Advice, reassurance and referral are needed as appropriate.

What you need to know
When did it start?
Where did it start?
Where did it spread?
Any other symptoms?
Infectious diseases
Chickenpox
Measles
Roseola infantum
Fifth disease
German measles
Meningitis
Rashes that do not blanch

Chickenpox (also known as varicella)

This is most common in children under 10. It can occur in adults but is unusual. The incubation time (i.e. time between contact and development of the rash) is usually about 2 weeks (11–21 days). Sometimes the rash is preceded by a day or so of feeling unwell with a temperature. The rash is characteristic and only difficult to diagnose when very few spots are present. Typically it starts with small red lumps that rapidly develop into minute blisters (vesicles). The vesicles then burst, forming crusted spots over the next few days. The spots mainly occur on the trunk and face but may involve the mucous membranes of the

mouth. They tend to come out in crops for up to 5 days. The rash is often irritating. Once the spots have all formed crusts, the individual is no longer contagious. The whole infection is usually over within 1 week but it may be longer and more severe in adults.

The symptoms may be eased with *paracetamol* if a high temperature is present. Warm salt baths may be comforting. *Calamine lotion* can also be useful. Sometimes the spots can become infected after scratching, so it can be helpful to advise cutting the child's fingernails short to reduce the chance of this possibility.

Measles

This is now a less common infection in the more developed countries. A combined measles, mumps, rubella (MMR) vaccine is given between the ages of 12 and 15 months. Measles has an incubation period of about 10 days. The measles rash is preceded by 3–4 days of illness with symptoms of cold, cough, conjunctivitis and fever. After the first 2 days of this prodromal phase, small white spots (Koplik spots), like grains of salt, can be seen on the inner cheek and gums. The measles rash then follows. It starts behind the ears, spreading to the face and trunk. The spots are small, red patches (maculae), which will blanch if pressed. Sometimes there are so many spots that they merge together to form large red areas.

In most cases the rash fades after 3 days, at which time the fever also subsides. If, however, the fever persists, the cough becomes worse, or there is difficulty in breathing or earache, then medical attention should be sought as complications may be developing.

Table 7 Nature and risk of complications of measles (www.medinfo.co.uk)

Complications	Risk
Diarrhoea	1 in 6
Ear infection	1 in 20
Pneumonia/chest infection	1 in 25
Fits	1 in 200
Meningitis/encephalitis	1 in 1000
Death	1 in 2500–5000
Serious brain complication years later (subacute sclerosing panencephalitis)	1 in 8000 (of children who have measles under 2 years)

Roseola infantum

Roseola infantum is a viral infection occurring most commonly in the first year of life (but also between 3 months and 4 years of age). It can

be confused with a mild attack of measles. There is a prodromal period of 3–4 days of fever followed by a rash similar to measles but which is mainly confined to the chest and abdomen. Once the rash appears there is usually an improvement in symptoms, in contrast to measles, and it only lasts about 24 h.

Fifth disease (erythema infectiosum)

Fifth disease is another viral infection (parvovirus B19), which usually affects children. It does not often cause systemic upset but may cause fever, headache and rarely, painful joints. The rash characteristically starts on the face. It particularly affects the cheeks and gives the appearance that the child has been out in a cold wind. Fifth disease is sometimes called 'slapped cheek' disease because of the appearance of reddened cheeks. The rash then appears on the limbs and trunk as small red spots that blanch with pressure. The infection is usually short-lived.

German measles (rubella)

German measles is a viral infection that is generally very mild, its main significance being the problems caused to the fetus if the mother develops the infection in early pregnancy. The incubation time for German measles is 12–23 days. The rash is preceded by mild catarrhal symptoms and enlargement of glands at the back of the neck. It usually starts on the face and spreads to the trunk and limbs. The spots are very fine and red. They blanch with pressure. They do not become confluent as in measles. In adults rubella may be associated with painful joints. The rubella rash lasts for 3–5 days.

Meningitis

Meningitis is a very serious infection that can be caused by bacterial, viral or fungal infections. The bacterial causes, which are much more serious than viral causes, include meningococcus, *Haemophilus* and pneumococcus infections. In the UK there are now vaccines routinely given for meningococcus C and *Haemophilus influenzae* B. Meningococcus can cause a septicaemia (infection spreading throughout the body in the blood) in addition to meningitis alone, causing a typical rash.

Meningococcal septicaemia usually presents with flu-like symptoms that may rapidly worsen (see Table 8). There may be an associated rash that appears as small widespread bruises (very small bruises are called petechiae, and larger ones, ecchymoses). Bruises do not blanch with pressure. The spots will start as tiny pinpricks and progress to fresh bruises. The tumbler or glass test can be used to determine

whether or not the rash is serious. The side of a glass tumbler should be pressed firmly against the skin. If the spots are the small bruises of septicaemia, they will not fade when the tumbler is pressed against the skin. Any suspicion of this condition requires emergency medical help.

Table 8 Warning symptoms

Meningitis symptoms in babies	Meningitis symptoms in children and adults
High temperature, fever, possibly with cold hands and feet	High temperature, fever, possibly with cold hands and feet
Vomiting or refusing feeds	Vomiting, sometimes diarrhoea
High-pitched moaning, whimpering cry	Neck stiffness (unable to touch chin to chest)
Blank, staring expression	Joint or muscle pains, sometimes stomach cramps
Pale blotchy complexion	Dislike of bright lights
May be floppy, may dislike being handled, may be fretful	Drowsiness
Difficult to wake or lethargic	Fits
Fontanelle (soft spot) may be tense or bulging	Confusion or disorientation
May have rash	May have rash

Taken from the Meningitis Trust website (there is no particular order for these symptoms to occur, not all have to be present and there may be others not mentioned).

Rashes that do not blanch

As a general rule all rashes that do not blanch when pressed (use glass tumbler test described in section on meningitis) ought to be referred to a doctor. These rashes are caused by blood leaking out of a capillary, which may be caused by a blood disorder. It could be the first sign of leukaemia or a much les serious condition. Blanching is not a concept that parents are familiar with. It is important to explain what is meant by blanching and how parents can check for it. For example, is it better to press with the fingers rather than a glass?

When to refer
Suspected meningitis (see Table 8)
Flu-like symptoms
Vomiting
Headache
Neck stiffness

Rash
Small widespread bruises that do not blanch when pressed
Rashes that do not blanch when pressed

Management

The itching caused by childhood rashes such as chickenpox can be intense, and the pharmacist is in a good position to offer an antipruritic cream, ointment or lotion. *Aqueous calamine cream* may help to soothe itchy skin although there is no strong evidence of effectiveness for calamine. The addition of 1% *menthol* provides an antipruritic and cooling effect, which can be very comforting for irritated skin. *Calamine lotion* has been used traditionally but it is now thought that the powdery residue it leaves may further dry and irritate itchy dry skin. If itching is very severe, a systemic antihistamine such as *promethazine* can be effective in providing relief. Such treatment would be likely to make the child drowsy but may be useful at night-time.

Colic

The cause of colic is unknown and it may affect between one in twenty and one in five babies. Although infantile colic is not harmful, it is stressful for both the baby and parents. It generally begins in the first few weeks after the baby is born and resolves by the time the baby is 3–4 months old. The formal definition is 'crying for at least 3 h a day, on at least 3 days a week, and for at least 3 weeks'.

What you need to know

Age
Symptoms
Feeding
Does the mother smoke?
Any advice already sought?

Age

Colic generally starts in the early weeks and may last up to the age of 3–4 months.

Symptoms

Mothers usually describe crying that occurs in the late afternoon and evening, where the baby cannot be comforted, becomes red in the face and may draw the knees up. Passing wind and difficulty in passing stools may also occur.

It is important to be aware that colic is not the only cause of crying and discomfort. If a baby becomes inconsolable and cannot be comforted, the parent should be advised to consult the GP. Rarely problems such as volvulus (twisting of the intestines) can occur and cause incessant and loud crying.

Feeding

Establishing whether the baby is bottle- or breastfed (or a combination) and the type of formula milk being used.

Does the mother smoke?

There does seem to be an association between maternal smoking and colic in the baby.

Any advice already sought?

It is useful to ask whether advice has been sought already either from health professionals or lay sources. The pharmacist can assess the relevance and appropriateness of advice already received.

Management

There is no good evidence to support any of the commonly tried approaches to management. It is important to reassure parents that colic is not their fault and that the baby will 'grow out of it'.

Dimethicone

Dimethicone has been commonly used to treat infantile colic and is included in several proprietary preparations. However, only three small trials were found in systematic reviews, and the evidence of benefit is uncertain. A trial of *dimethicone* could be suggested if other strategies are unsuccessful and the parents would like to try treatment.

Feeding

For breastfed infants it may be worth the mother considering the exclusion of cow's milk from her diet. There is a theoretical rationale for this in that breast milk contains intact cow's milk proteins. However, there is no good evidence of benefit. A trial of cow's milk exclusion for 1 week could be suggested. This means that the mother needs to stop eating all forms of dairy produce. If there appears to be some improvement, referral to the health visitor for further advice on diet is appropriate.

Where the baby is being bottle-fed and symptoms are severe and persistent, the mother might consider trying hypoallergenic formula (*caseinogen (casein) hydrolysate*) milk. Studies indicate that this may reduce crying by over 20%. A trial of such milk for 1 week could be suggested. If there appears to be a response, referral for further advice on diet from the health visitor is appropriate. Evidence is less strong for whey hydrolysate formula. There is limited evidence of effectiveness of soya milk in reducing crying. There is no evidence to support the use of low lactose or fibre-enriched milk.

Complementary therapies

A study of herbal tea in colic showed a large reduction in crying but there are concerns over the study design. Furthermore, the safety of herbal teas in infants has been questioned, probably because of issues around standardisation of ingredients and questions about the possible presence of other ingredients.

Behvioural approaches

In the past it was thought that overstimulation of the baby might be a cause of colic. Therefore there have been studies to test avoiding carrying or holding the baby unnecessarily and not intervening too rapidly when the baby cries. These studies did not show a significant effect.

Baby massage

Although baby massage seems to have become more popular as a method of managing colic, the evidence of benefit is uncertain.

Other health professionals

Health visitors can advise and support families on infant feeding and other problems.

Teething

The association of discomfort and physical change associated with teething is a matter of some debate. Many health professionals and parents associate symptoms of agitation, fever and diarrhoea with teething. A recent study showed that the number of symptoms ascribed to teething was: paediatricians (2.8), dentists (4.4), GPs (6.5), pharmacists (8.4) and nurses (9.8). The more contemporary view of teething is that it is a local phenomenon that may account for symptoms such as dribbling, drooling and biting objects but is not itself a cause of infection. One theory is that bottle-fed babies receive fewer antibodies than those who are breastfed, and this may result in an association between teething and systemic symptoms. An important point about associating systemic problems with teething is that a more serious underlying cause may be overlooked.

The appropriate management of teething is local discomfort relief using application of cold and the use of analgesics (*paracetamol suspension*) or topical gels. There is a homoeopathic teething product available as granules, and some mothers may prefer complementary therapies.

Napkin rash

Most babies will have napkin (nappy) rash at some stage during their infancy. Contributory factors include contact of urine and faeces with the skin, wetness and maceration of skin due to infrequent nappy changes and inadequate skin care. Advice from the pharmacist is important in both treating and preventing recurrence of the problem.

What you need to know
Nature and location of rash
Severity
Broken skin
Signs of infection
Duration
Previous history
Other symptoms
Precipitating factors
Skin care and hygiene
Medication

Significance of questions and answers

Nature and location of rash

Nappy rash, sometimes called napkin dermatitis, appears as an erythematous rash on the buttock area. Other areas of the body are not involved, in contrast to infantile seborrhoeic dermatitis, where the scalp may also be affected (cradle cap). In infantile eczema, other body areas are usually involved. The initial treatment of nappy rash would be the same in each case.

Severity

In general, if the skin is unbroken and there are no signs of secondary bacterial infection, treatment may be considered. The presence of bacterial infection could be signified by weeping or yellow crusting. Secondary fungal infection is common in napkin dermatitis and the presence of satellite papules (small, red lesions near the perimeter of the affected area) would indicate such an infection. Referral to the

doctor would be advisable if bacterial infection were suspected, since topical or systemic antibiotics might be needed. Secondary fungal infection could be treated by the pharmacist using one of the azole topical antifungal preparations that are available.

Duration

If the condition has been present for longer than 2 weeks, the pharmacist might decide that referral to the doctor would be the best option, depending on the nature and severity of the rash.

Previous history

The pharmacist should establish whether the problem has occurred before and, if so, what action was taken; e.g. treatment with OTC products.

Other symptoms

Napkin dermatitis sometimes occurs during or after a bout of diarrhoea, when the perianal skin can become reddened and sore. The pharmacist should therefore enquire about current or recent incidence of diarrhoea. Diarrhoea may occur as a side-effect of antibiotic therapy and this may be the cause. Sometimes thrush in the nappy area may be associated with oral thrush, which causes a sore mouth or throat (see p. 304). If this is suspected, referral to the doctor is advisable.

Precipitating factors

Skin care and hygiene

At one time napkin dermatitis was thought to be a simple irritant dermatitis due to ammonia, produced as a breakdown product of urine in soiled nappies. However, other factors are now known to play a part in the development of the condition. These include irritant substances in urine and faeces; sensitivity reactions to detergents and antiseptics left in terry nappies after inadequate rinsing; and sensitivity reactions to ingredients in some topical preparations; e.g. lanolin (although purified versions of wool fat have reduced the problems previously caused by wool fat and lanolin). However, the major factor thought to influence the incidence of nappy rash is the constant wetting and re-wetting of the skin when left in contact with soiled nappies. Maceration of the skin ensues, leading to enhanced penetration of irritant substances through the skin and the breakdown of the skin. Wearing occlusive plastic pants exacerbates this effect. Frequent changes of nappy together with good nappy-changing routine and hygiene are essential (see 'Practical points' below).

Medication

The identity and effectiveness of any preparations used for the current or any previous episode, either prescribed or purchased OTC, should be ascertained by the pharmacist. The possibility of a sensitivity reaction to an ingredient in a topical product already tried should be considered by the pharmacist, especially if the rash has worsened.

When to refer
Broken skin, severe rash
Signs of infection
Other body areas affected

Treatment timescale

A baby with nappy rash that does not respond to skin care and OTC treatment within 1 week should be seen by the doctor.

Management

Treatment of napkin dermatitis and the prevention of further episodes can be achieved by a combination of OTC treatment and advice on care of the skin in the nappy area.

Emollient preparations

Emollient preparations are the mainstay of treatment. The inclusion of a water repellent such as *dimethicone* may be useful. Such preparations can help to protect the skin against water. The choice of individual preparation may sometimes depend on customer preference and many preparations are equally effective. Most pharmacists will have a particular favourite, which they usually recommend. Some of the ingredients included in preparations for the treatment and prevention of nappy rash and their uses are described below.

Zinc

Zinc acts as a soothing agent.

Lanolin

Lanolin emollient hydrates the skin. It can sometimes cause sensitivity reactions, although the high grades of purified lanolin used in many of today's products should reduce the problem.

Castor oil/cod liver oil

Castor oil and cod liver oil provide a water-resistant layer on the skin.

Antibacterials (e.g. chlorhexidine gluconate)

These may be useful in reducing the numbers of bacteria on the skin. Some antibacterials have been reported to produce sensitivity reactions.

Antifungals

Secondary infection with *Candida* is common in napkin dermatitis and the azole antifungals would be effective. *Miconazole* or *clotrimazole* applied twice daily could be recommended by the pharmacist with advice to consult the doctor if the rash has not improved within 5 days. If an antifungal cream is advised, treatment should be continued for 4 or 5 days after the symptoms have apparently cleared. An emollient cream or ointment can still be applied over the antifungal product.

Hydrocortisone

Prescription-only medicine

Hydrocortisone cream or *ointment* cannot be sold by pharmacists for the treatment of nappy rash because its use OTC is restricted to children over 10 years. Topical steroids are effective treatments for napkin dermatitis and other preparations containing steroids may well be prescribed by the doctor for this purpose. Pharmacists can give valuable advice about the correct method of use.

Method of use

Firstly, the preparation should be applied thinly and sparingly; the pharmacist can reassure the parents that only a small amount is needed for effectiveness. Secondly, the absorption of corticosteroids from topical vehicles is increased when the skin is occluded by wearing plastic pants. Occasionally there are systemic side-effects as a result of large quantities of topical steroids being applied followed by occlusion under waterproof pants. The more potent the steroid, the higher is the chance that such adverse effects will be produced. Parents should be reminded that if the condition does not respond quickly to treatment (within 10 days), further advice should be sought from the doctor.

Practical points

1 Nappies should be changed as frequently as necessary. Babies up to 3 months old may pass urine as many as 12 times a day.

2 Nappies should be left off wherever possible so that air is able to circulate around the skin, helping the affected skin to become and remain dry. Lying the baby on a terry nappy or towel with a waterproof sheet underneath will prevent the soiling of furniture or bedding.

3 Where terry nappies are used, they need to be changed sufficiently often, rinsed thoroughly after washing to remove traces of detergent and used with a good quality nappy liner. The technology of water-absorbent materials has advanced considerably in recent years and disposable nappies are able to keep the skin in the nappy area very dry. However, disposable nappies must still be changed regularly. There is no clear case to recommend one type of nappy over the other. Skin care and regular changing remain the most important factors (see point 6).

4 Waterproof pants create an occlusive barrier, which prevents the evaporation of moisture and can worsen napkin dermatitis. If such garments are to be used at all, they should only be used for short periods of time.

5 The washing routine for terry nappies is important. If a sanitising solution is used to soak the nappies, thorough rinsing is needed before washing. The nappies should be rinsed well after washing to ensure that no chemicals are left in the fabric that might irritate the baby's skin. Towelling nappies may be bleached occasionally before washing, but thorough rinsing is essential.

6 At each nappy change the skin should be cleansed thoroughly by washing with warm water or using a proprietary lotion or wipes. The skin should then be carefully and thoroughly dried. The use of talcum powder can be helpful, but the clumping of powder can sometimes cause further irritation. Talcum powder should always be applied to dry skin and should be dusted lightly over the nappy area. The regular use of an emollient cream or ointment, applied to clean dry skin, can help to protect the skin against irritant substances.

Napkin rash in practice

Case 1

Jane Simmonds, a young mother, asks you to recommend a good cream for her baby daughter's nappy rash. The baby (Sarah) is 3 months old and Mrs Simmonds tells you that the buttocks are covered in a red rash. The skin is not broken and there is no weeping or yellow matter present. On further questioning, you find that the rash is also affecting the upper back and neck and there are signs of its appearance around the wrists. The rash seems to be itchy, as Sarah keeps trying to

scratch the affected areas. Mrs Simmonds uses disposable nappies, which she changes frequently, and *zinc* and *castor oil cream* is applied at each nappy change, after cleansing the skin. The baby has no other symptoms and is not taking any medicines.

The pharmacist's view

Mrs Simmonds' nappy-changing and skin-care routine seems to be adequate, but the baby has nappy rash and the rash has affected other areas of the body. It is possible that Sarah has infantile eczema and referral to the doctor would be the best course of action.

The doctor's view

It is quite likely that Sarah does have eczema, which could be the cause of her nappy rash. It is also possible that an eczematous rash can be complicated by a secondary infection. Referral to the doctor or health visitor for further assessment would be wise. Such skin problems can be an emotive topic and it is important that Mrs Simmonds should be given an opportunity to air her understanding and concerns about the problem, and in return, that the doctor offer an appropriate explanation. The management would be to reinforce all the above practical points and possibly prescribe a weak topical steroid such as 1% *hydrocortisone* with or without an antifungal or antibacterial agent.

Case 2

Mrs Lesley Tibbs is worried about her baby son's nappy rash, which she tells you seems to have appeared over the last few days. The skin is quite red and looks sore and she has been using a proprietary cream, but the rash seems to be even worse. The baby has never had nappy rash before and is about 5 months old. Mrs Tibbs is using towelling nappies, which she soaks in a proprietary solution before washing in an automatic washing machine. She has recently changed the washing powder she uses, on a friend's recommendation. The rash affects only the napkin area and the baby has no other symptoms.

The pharmacist's view

The history gives two clues to the possible cause of the problem. This baby has not had nappy rash before and this episode has coincided with a change in detergent; so it is possible that a sensitivity reaction is occurring due to residues of detergent in the nappies after washing. The second factor is the cream that Mrs Tibbs has been using to treat the problem, with no success. The ingredients of the product should be carefully considered by the pharmacist to see if any might be potential sensitisers.

Initial advice to Mrs Tibbs might be to revert to her original detergent and to use a different treatment. Advice on nappy-changing routine could be given and if the rash has not started to resolve within 1 week, or has become worse, referral to the doctor should be indicated.

The doctor's view

The advice given by the pharmacist should clear up the problem quickly. It would be quite reasonable to refer Mrs Tibbs and her baby to the health visitor for further advice if the rash does not settle down.

Head lice

Head lice infection is common in young children. Effective treatments are available, but treatment failure may occur if products are not used correctly. It is therefore important for the pharmacist to explain how products should be used, since more patients are now being directed to pharmacies to obtain treatment. The pharmacist has a valuable health education role in explaining how to check children's hair for lice and in discouraging prophylactic use of insecticides. Parents are often embarrassed to seek advice, particularly if the child has head lice. Pharmacists can reassure parents that the condition is common and does not in any way indicate a lack of hygiene. The term infection is preferred to infestation because of the unpleasant image associated with infestation.

What you need to know
Age
Child, adult
Signs of infection
Live lice
Checking for infection
Nits
Scalp itching
Previous infection
Medication
Treatments used

Significance of questions and answers

Age

Head lice infection is most commonly found in children, particularly at around 4–11 years, with girls showing a higher incidence than boys. Older children and adults seem to be less prone to infection. Adult women occasionally become infected, but head lice infection is rare in adult men because, as men lose hair through male pattern baldness, the scalp offers less shelter to lice.

Signs of infection

Unless infection has been confirmed by a nurse or doctor who has conducted wet combing of the hair or inspected the scalp, the pharmacist should ask whether any check has been made to confirm the presence of head lice. Parents often worry that their children may catch lice and want the pharmacist to recommend prophylactic treatment. Insecticides should never be used prophylactically, since this may accelerate resistance. Treatment should be reserved for infected heads. However, a louse repellent is now available (see p. 298).

Checking for infection

Recent evidence suggests that wet combing of the hair is a more reliable detection method than scalp inspection. Parents can easily check for infection by combing the child's hair over a piece of white or light-coloured paper, using a fine-toothed comb. The hair should be damp or wet to make the combing process easier and less painful. Also, dry hair can produce static that causes lice to be repelled from the comb, making detection less likely. If live lice are present, some will be combed out of the hair and onto the paper, where they will be seen as small greyish-white or brown-coloured specks. Cast shells are discarded as the louse grows and appear yellowish in colour. Louse faeces may be seen as small blackish specks on pillows and collars. The hair at the nape of the neck and behind the ears should be thoroughly checked. These spots are preferred by lice because they are warm and relatively sheltered. Such a check should be carried out regularly, say once a week, and perhaps more often when infection is known to have occurred in other children at school or playgroup.

Nits

The presence of empty eggshells – the cream- or white-coloured nits attached to the hair shafts – is not necessarily evidence of current infection unless live lice are also found. Parents sometimes think that treatment has failed because nits can still be seen in the hair. It is therefore important for the pharmacist to explain that the empty shells are firmly glued to the hair shaft and will not be removed by the lotion used in treatment. A fine-toothed comb can be used to remove the nits after treatment.

Itching

Contrary to popular belief, itching is not experienced by everyone with a head lice infection. In fact, as few as one in five cases present with itching, perhaps because detection now occurs at an earlier stage than used to be the case. Where it occurs, itching of the scalp is an

allergic response to the saliva of the lice, which is injected into the scalp in small amounts each time the lice feed. Sensitisation does not occur immediately and it may take weeks for itching to develop. It has been estimated that thousands of bites from the lice are required before the reaction develops. The absence of itching does not mean that infection has not occurred. In someone who has previously been infected and becomes reinfected, itching may quickly begin again.

Previous infection

The pharmacist should establish whether the child has been infected before. In particular, it is important to know whether there has been a recent infection, as reinfection may have occurred from other family members if the whole family was not treated at the same time. Head-to-head contact, between family members and also among young children while playing, is responsible for the transmission of head lice from one host to the next. The pharmacist could ask whether the parent was aware of any contact with infected children; e.g. if there is currently a problem with head lice at the child's school.

Medication

While it is possible that treatment failure may occur, this is unlikely if a recommended insecticide has been used (see 'Management' below) correctly. Careful questioning will be needed to determine whether treatment failure has occurred. The identity of any treatment used and its method of use should be elicited.

Management

Having established that infection is present, the pharmacist can go on to recommend an appropriate treatment. *Malathion*, *permethrin* and *phenothrin* are available OTC, while *carbaryl* is a POM. All are effective treatments for head lice.

Bug busting, a method of wet combing, has been used as an alternative strategy to treatment with insecticides. Bug busting generally involves meticulous combing with a detection comb after conditioner has been applied. The hair is combed for about 30 min every 3–4 days for a minimum of 2 weeks. The results of the small number of clinical trials to date have shown it to be less effective than insecticides. Some parents may prefer to use non-insecticide treatment and may choose this method, which requires a high degree of commitment. The pharmacist should explain the evidence and discuss the options with the parent. Herbal treatments (e.g. tea tree oil) and aromatherapy have been tried but there is no evidence of effectiveness.

Insecticide policies were set up throughout the country to try and prevent the development of resistance. Current practice is to use a structured mosaic of treatment for individual patients. One preparation is used. If this treatment fails then another preparation from a different class of insecticides is used next. There is evidence of resistance to *permethrin* and *malathion*.

Teamwork between pharmacists, GPs and nurses (particularly those involved in prescribing for head lice) is important to ensure consistency of messages and treatment information. Pharmacists can also liaise with health visitors and school nurses to communicate with schools in the area and ensure the accuracy and currency of information given to parents and children.

There is still a stigma attached to head lice infection and many parents feel ashamed if their children become infected, feeling that infection must be a sign of poor hygiene. Of course this is not so and pharmacists can reassure their customers that head lice infection is not only extremely common, but equally likely to occur in clean as in dirty hair. Head-to-head contact means that lice are easily transferred from one person to the next.

Malathion, permethrin and phenothrin

Malathion, permethrin and phenothrin can be recommended OTC. It is generally recommended that all members of the family should be treated at the same time to prevent reinfection from another family member. Another approach is to treat only those in whom infection has been confirmed and to check the hair of all family members on a regular basis to look for infection. However, the latter requires a high level of motivation. Checking the hair by combing over white paper and visual inspection should confirm who is infected. Contact tracing is important to track the source of the infection and also to identify who might have become infected.

Family-sized treatment packs are available for some products. The pharmacist can advise doctors about the amount of lotion necessary to treat each person. This is sometimes underestimated by prescribers and should be 50–55 ml per person as a minimum. Using too little treatment has been a cause of treatment failure in the past, necessitating repeated treatment.

Carbaryl

Carbaryl is now available only as POM in the UK. Data from animal studies indicated the possibility of carcinogenicity, and the theoretical risk to humans led to the change in legal classification in 1996.

Which formulation?

There are two issues to consider when choosing a formulation: the first is the concentration of insecticide that will be in contact with the scalp; the second is the length of time the insecticide will be in contact with the scalp.

Lotions are the preferred treatment for head lice. A lotion is applied to the scalp and the hair left to dry. The insecticide is therefore in contact with the hair for a long period of time and at a high concentration. By contrast, a cream rinse or shampoo is diluted by water, so that the concentration of insecticide is lower. After shampooing, the hair is rinsed so that the insecticide is in contact with the scalp for only a short time. Because several applications of shampoo are needed, compliance may not be achieved and treatment failure can result. A cream rinse is left on for 10 min and a foam (mousse) for 30 min before shampooing off, so the contact time is short.

Alcoholic and aqueous lotions

Malathion and *carbaryl* are available as alcoholic and aqueous lotions. Alcohol-based formulations are generally useful but are not suitable for all patients because they can cause two types of problem. Firstly, alcohol can cause stinging when applied to scalps with skin broken as a result of scratching. Babies and other patients with eczema affecting the scalp may also experience stinging. Secondly, in patients with asthma, it is thought that alcohol-based lotions are best avoided, as the evaporating alcohol might irritate the lungs and cause wheezing, perhaps even precipitating an attack of asthma. Such reactions are likely to be extremely rare, but caution is still advised. Aqueous lotions are preferred for these patients and also for small children, to avoid alcoholic fumes.

Indications for shampoo

Shampoos are not recommended. Their clinical effectiveness is less than lotion and cream rinse formulations. In the past, shampoos were an alternative where alcoholic lotions were not suitable. However, aqueous versions of treatments are now available.

Method of use and advice

Malathion and carbaryl

Lotions. Malathion and *carbaryl lotions* should be rubbed gently into dry hair and care should be taken to ensure that the scalp is thoroughly covered; the wet hair is then combed. The most effective method of application is to sequentially part sections of the hair and

then apply a few drops of the treatment, spreading it along the parting into the surrounding scalp and along the hair. Approximately 50–55 ml of lotion should be sufficient for one application, although people with very thick or long hair may need more. A towel or cloth can be placed over the eyes and face to protect them from the lotion. When applying the product, particular attention should be paid to the areas at the nape of the neck and behind the ears, where lice are often found. The hair should then be left to dry naturally. Hair driers or other heat sources should not be used with *carbaryl* and *malathion* because both are inactivated by heat. In addition, where an alcoholic lotion is used, the hair should be kept away from fire and naked flames.

A minimum contact time of 12 h (or overnight) with the hair is now recommended for lotions and liquids. A repeat application 7 days after the initial treatment should be recommended. This second application will kill any lice that have emerged from eggs in the meantime.

Shampoos. *Malathion* and *carbaryl shampoos* are rarely used and are included here only for completeness. The hair should be shampooed with the product and rinsed; then the application should be repeated, leaving the shampoo on the hair for 5 min before rinsing off. Warm rather than hot water should be used to minimise the chances of the insecticide being inactivated. Following the first treatment, the product should be used twice more, at 3-day intervals. This regime for shampoos is necessary because the incubation period for head lice is 7–10 days. While no new eggs would be laid after the first application of shampoo, there remains the possibility that some live eggs would not have been killed and so may hatch out; hence the need for two further applications.

Permethrin and phenothrin lotions

Permethrin. *Permethrin lotion* is formulated as a cream rinse containing 20% alcohol. The hair should first be washed, rinsed and towel dried (if the hair is too wet, the cream rinse will not adhere properly). The cream rinse should be massaged well into the towel-dried hair to soak both hair and scalp, and then left on for 10 min before rinsing thoroughly with water and drying as normal. A residual effect may last for up to 6 weeks. *Permethrin* is not inactivated by chlorine in swimming pools.

Phenothrin. *Phenothrin lotion* is formulated as an aqueous or alcoholic and a foam (mousse) containing *phenothrin* in an alcoholic base. The lotion is sprinkled onto dry hair and rubbed gently until hair and

scalp are soaked. The hair is then left to dry naturally. The aqueous lotion is left on for 12 h or overnight. Manufacturers say that the alcoholic lotion can be shampooed off after 2 h. The foam is applied to dry hair and the hair is shampooed after 30 min. *Phenothrin* is not inactivated by chlorine in swimming pools.

Removing eggs and nits

After using a lotion or shampoo, a fine-toothed dust comb can be used to remove the eggs and empty shells (nits), which will have remained glued to the hair shafts. Combing is best done the next time the hair is washed, while it is wet.

Residual effect

A residual effect from insecticides can occur after the use of lotions, but not shampoos. The effect takes several hours of contact to develop when using *carbaryl* and *malathion* and the level of residual action varies from person to person. Once established, the effect may last for several weeks. In the case of *carbaryl* and *malathion*, contact with chlorinated water during swimming will reduce any residual effect, as will the application of heat via hairdryers.

Treatment failure

The most likely cause of treatment failure is emerging lice that have not been killed by the initial application. Resistance to the insecticide is responsible for a minority (30%) of cases of treatment failure.

Repellents

A head louse repellent product containing *piperonal* is available in the UK. The chemical affects the head louse's perception of temperature such that the hair appears cool. The louse is theoretically unlikely to transfer to such a head since lice need warm temperatures. The use of repellents may help to reduce the inappropriate use of insecticides for the prevention of head lice infection. However, effectiveness is uncertain.

Head lice in practice

Case 1

A young mother, who often comes into your pharmacy to ask for advice and buy medicines for her children, asks for a product to prevent head lice. Her children have not got head lice but she wants to use a soap or shampoo just to be on the safe side. On questioning, you find out that the children are aged 5 and 7 and that there are no

signs of infection such as itching scalps. The children's heads have not been checked for lice. She is not sure how to go about making such a check. There has not been any communication from the children's school to indicate that head lice is a current problem at the school. This lady explains that she is very hygiene-conscious and would hate her children to get nits.

The pharmacist's view

Insecticides should never be recommended unless there is evidence of infection. From what this mother has said it seems unlikely that her children have head lice and there is no evidence of a current problem at school. The pharmacist can therefore reassure her that infection is unlikely. In cases such as this where parents with their children's interest at heart seek to use insecticides to prevent infection, careful explanation from the pharmacist is required. Firstly, the parent can be reassured that head lice and hygiene have absolutely nothing to do with each other and that lice actually prefer clean heads. Head lice are easily transferred from one head to another, particularly among schoolchildren. It is important to stress that insecticide lotions or shampoos will be ineffective in preventing infection and may even contribute to the development of resistant lice. The ritual use of insecticides, which was a feature of some parents' own childhood, was both unnecessary and ineffective.

The pharmacist can then explain how to make weekly checks for lice using wet combing with a fine-toothed comb and a light-coloured sheet of paper. If any signs are found, the parent should return to the pharmacy, at which time the pharmacist will recommend an insecticide. In the meantime, if the mother is keen to do something more active, a repellent product could be recommended.

The doctor's view

The advice given by the pharmacist is very helpful. It would have certainly been a lot quicker and more convenient, but inappropriate, to have sold the mother an insecticide preparation. Hopefully the information given by the pharmacist will allay her anxiety regarding hygiene and lice. This demonstrates an important role of health education that can be provided in the pharmacy.

Threadworms (Pinworms)

Infection with threadworms (*Enterobius vermicularis*) is common in young children, and parents may seek advice from the pharmacist. As with head lice infections, many parents feel embarrassed about discussing threadworms and feel ashamed that their child is infected. Pharmacists can give reassurance that this is a common problem. In addition to recommending OTC antihelminthic treatment, it is essential that advice be given about hygiene measures to prevent reinfection.

What you need to know
Age
Signs of infection
Perianal itching
Appearance of worms
Other symptoms
Duration
Recent travel abroad
Other family members affected
Medication

Significance of questions and answers

Age

Threadworm infection is very common in schoolchildren.

Signs of infection

Usually the first sign that parents notice is the child scratching his or her bottom. Perianal itching is a classic symptom of threadworm infection and is caused by an allergic reaction to the substances in and surrounding the worms' eggs, which are laid around the anus. Sensitisation takes a while to develop so in someone infected for the first time itching will not necessarily occur.

Itching is worse at night, because at that time the female worms emerge from the anus to lay their eggs on the surrounding skin. The eggs are secreted together with a sticky irritant fluid onto the perianal

skin. Persistent scratching may lead to secondary bacterial infection. If the perianal skin is broken and there are signs of weeping, referral to the doctor for antibiotic treatment would be advisable.

Loss of sleep due to itching may lead to tiredness and irritability during the day. Itching without the confirmatory sighting of threadworms may be due to other causes, such as an allergic or irritant dermatitis caused by soaps or topical treatments used to treat the itching. In some patients, scabies or fungal infection may produce perianal itching.

Appearance of worms

The worms themselves can be easily seen in the faeces as white or cream-coloured threadlike objects, about 10 mm in length and less than 0.5 mm in width. Males are smaller than females. The worms can survive outside the body for a short time and hence may be seen to be moving. Sometimes the worms may be seen protruding from the anus itself.

Other symptoms

In severe cases of infection, diarrhoea may be present and, in girls, vaginal itch.

Duration

If a threadworm infection is identified, the pharmacist needs to know how long the symptoms have been present and to consider this information in the light of any treatments tried.

Recent travel abroad

If any infection other than threadworm is suspected, patients should be referred to their doctor for further investigation. If the person has recently travelled abroad, this information should be passed on to the doctor so that other types of worm can be considered.

Other family members

The pharmacist should enquire whether any other member of the family is experiencing the same symptoms. However, the absence of perianal itching and threadworms in the faeces does not mean that the person is not infected; it is important to remember that during the early stages, these symptoms may not occur.

Medication

The pharmacist should enquire about the identity of any treatment already tried to treat the symptoms. For any antihelminthic agent,

correct use is essential if treatment is to be successful. The pharmacist should therefore also ask how the treatment was used, in order to establish whether treatment failure might be due to incorrect use.

When to refer
Infection other than the threadworm suspected
Recent travel abroad
Medication failure

Management

When recommending treatment for threadworms, it is important that the pharmacist emphasise how and when the treatment is to be used. In addition, advice about preventing recurrence can be given, as described under 'Practical points' below. The *BNF* states that *mebendazole* is the treatment of choice for patients of all ages. If symptoms do not remit after correct use of an appropriate preparation, patients should see their doctor.

Mebendazole

Mebendazole is the preferred treatment for threadworms. *Mebendazole* is an effective, single-dose treatment against threadworm, which is also active against whipworm, roundworm and hookworm. Compliance with therapy is high because of the single dose. The drug is formulated as a single tablet, which can be given to children aged 2 and over and to adults. Reinfection is common and a second dose can be given after 2–3 weeks. Occasionally abdominal pain and diarrhoea may occur as side-effects. *Mebendazole* is not recommended for pregnant women.

Piperazine

Piperazine is effective against threadworm and roundworm. It is available in granular form in sachets. The mode of action of *piperazine* seems to be paralysis of the threadworms in the gut. The incorporation of a laxative (*senna*) in the sachet preparation helps to ensure that the paralysed worms are then expelled with the faeces.

Instructions

One dose is followed by another 2 weeks later to destroy any worms that might have hatched and developed after the first dose. Only 2 doses are required.

Side-effects

Side-effects of *piperazine* include nausea, vomiting, diarrhoea and colic but these are uncommon. Adverse effects on the CNS include headaches and dizziness but these are rare.

Contraindications

Piperazine can be recommended OTC for children from 1 year onwards. It should not be recommended for pregnant women because, although a direct causal relationship has not been established, some cases of fetal malformations have been reported. Its use is contraindicated in epileptic patients since it has been shown to have the potential to induce fits in patients with grand mal epilepsy. *Piperazine* may also potentiate extrapyramidal side-effects of *chlorpromazine* and should not be recommended for patients on neuroleptic therapy. Where impairment of renal function is present, *piperazine* should not be used. In some European countries, *piperazine* has been removed from the market because of concern about adverse effects.

Practical points

1 Parents are often anxious and ashamed that their child has a threadworm infection, thinking that lack of hygiene is responsible. The pharmacist can reassure parents that threadworm infection is extremely common and that any child can become infected; infection does not signify a lack of care and attention.

2 All family members should be treated at the same time, even if only one has been shown to have threadworms. This is because other members may be in the early stages of infection and thus asymptomatic. If this policy is not followed, reinfection may occur.

3 Transmission and reinfection by threadworms can be prevented by the following practical measures:

(a) Cutting fingernails short to prevent large numbers of eggs being transmitted. Hands should be washed and nails brushed after going to the toilet and before preparing or eating food, since hand-to-mouth transfer of eggs is common. Eggs may be transmitted from the fingers while eating food, or onto the surface of food during preparation. Eggs remain viable for up to 1 week.

(b) Children wearing pyjamas to reduce the scratching of bare skin during the night. Underpants can be worn under pyjama bottoms.

(c) Affected family members having a bath or shower each morning to wash away the eggs that were laid during the previous night.

Oral thrush

Thrush (candidosis) is a fungal infection, which occurs commonly in the mouth (oral thrush), in the nappy area in babies and in the vagina (see p. 243). Oral thrush in babies can be treated by the pharmacist.

What you need to know
Age
Infant, child, adult, elderly
Affected area
Appearance
Previous history
Medication

Significance of questions and answers

Age

Oral thrush is most common in babies, particularly in the first few weeks of life. Often, the infection is passed on by the mother during childbirth. In older children and adults, oral thrush is rarer, but may occur after antibiotic or inhaled steroid treatment (see 'Medication' below). In this older group it may also be a sign of immunosuppression and referral to the doctor is advisable.

Affected areas

Oral thrush affects the surface of the tongue and the insides of the cheeks.

Appearance

Oral thrush

When candidal infection involves mucosal surfaces, white patches known as plaques are formed, which resemble milk curds; indeed, they may be confused with the latter by mothers when oral thrush occurs in babies. The distinguishing feature of plaques due to *Candida* is that they are not so easily removed from the mucosa, and when the surface of the plaque is scraped away, a sore and reddened area of mucosa will be seen underneath, which may sometimes bleed.

Napkin rash

In the napkin (nappy) area, candidal infection presents differently, with characteristic red papules on the outer edge of the area of nappy rash, so-called satellite papules. Another feature is that the skin in the folds is nearly always affected. Candidal infection is now thought to be an important factor in the development of nappy rash (see p. 285).

Previous history

In babies recurrent infection is uncommon, although it may sometimes occur following reinfection from the mother's nipples during breast-feeding, or from inadequately sterilised bottle teats in bottle-fed babies.

Patients who experience recurrent infections should be referred to their doctor for further investigation.

Human immunodeficiency virus infection

Persistence of oral thrush and/or thrush of the nappy area after the neonatal period may be the first sign of HIV infection.

Medication

Antibiotics

Some drugs predispose to the development of thrush. For example, broad-spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection. It would be useful to establish whether the patient has recently taken a course of antibiotics.

Immunosuppressives

Any drug that suppresses the immune system will reduce resistance to infection, and immunocompromised patients are more likely to get thrush. Cytotoxic therapy and steroids predispose to thrush. Patients using inhaled steroids for asthma are prone to oral thrush because steroid is deposited at the back of the throat during inhalation, especially if inhaler technique is poor. Rinsing the throat with water after using the inhaler may be helpful.

The pharmacist should identify any treatment already tried. In a patient with recurrent thrush it would be worth enquiring about previously prescribed therapy and its success.

When to refer
Recurrent infection
All except babies
Failed medication

Treatment timescale

Oral thrush should respond to treatment quickly. If the symptoms have not cleared up within 1 week, patients should see their doctor.

Management

Antifungal agents

Miconazole

The only specially formulated product currently available for sale OTC to treat oral thrush is *miconazole gel*. Preparations containing *nystatin* are also effective, but are restricted to prescription-only status.

Miconazole gel is an orange-flavoured product, which should be applied to the plaques using a clean finger four times daily after food in adults and children over 6 years, and twice daily in younger children and infants. For young babies, the gel can be applied directly to the lesions using a cotton bud or the handle of a teaspoon. The gel should be retained in the mouth for as long as possible. Treatment should be continued for 2 clear days after the symptoms have apparently gone, to ensure that all infection is eradicated.

Miconazole gel should not be recommended for patients taking anticoagulants. There is evidence of an interaction with *warfarin* leading to an increase in bleeding time.

Practical points

Oral thrush and nappy rash

If a baby has oral thrush, the pharmacist should check whether nappy rash is also present. Where both oral thrush and candidal involvement in nappy rash occur, both should be treated at the same time. An antifungal cream containing *miconazole* or *clotrimazole* can be used for the nappy area.

Breastfeeding

Where the mother is breastfeeding, a small amount of *miconazole gel* applied to the nipples will eradicate any fungus present. For bottle-fed babies, particular care should be taken to sterilise bottles and teats.

Oral thrush in practice

Case 1

Helen Jones, a young mother, brings her daughter, Jane, to see you. Mrs Jones wants you to recommend something for Jane's mouth,

which has white patches on the tongue and inside the cheeks. Jane is 8 years old and is not currently taking any medicines. She has not recently had any antibiotics or other prescribed medicines. Jane does not have any other symptoms.

The pharmacist's view

Jane should be referred to her doctor, since thrush is rare in children other than infants. There is no apparent precipitating factor such as recent antibiotic therapy and Jane should see her doctor for further investigation.

The doctor's view

Helen Jones should be advised to take Jane to the doctor. The description is certainly suggestive of oral thrush. If there were any doubt as to the diagnosis, a swab could be taken for laboratory examination. If Jane did have thrush, then treatment such as *miconazole oral gel* or *nystatin oral suspension* might be prescribed. Treatment is enhanced by cleaning the white plaques off with a cotton bud prior to application.

The next concern would be to determine a precipitating cause. General enquiries about Jane's health would be necessary. The doctor would be in a good position to know of previous medical history including any transfusions and family history. A general physical examination would be carried out, looking, in particular, for signs of anaemia, any rashes or bruising, enlargement of lymph nodes (glands), enlargement of abdominal organs (e.g. liver or spleen) or any other masses. The doctor would be looking for signs of a malignancy such as leukaemia or lymphoma. Almost certainly blood tests would be arranged. The doctor would also make an assessment of any HIV risk factors and counsel Helen and Jane accordingly before initiating any further action.

Case 2

A young mother asks for something to treat her baby son's mouth. You look inside the baby's mouth and see white patches on the tongue and inside the cheeks. The baby is 8 weeks old and has had the patches for 2 days: at first his mother thought they were milk curds. He had some antibiotic syrup last week for a chest infection and finished it yesterday. The baby is not taking any other medicines and his mother has not given him anything to treat the symptoms yet. He has no other symptoms.

The pharmacist's view

You could recommend the use of *miconazole oral gel* for this baby. He has a thrush infection following antiobiotic therapy that should respond well to the *imidazole antifungal*. His mother should use 2.5 ml of gel twice daily after feeds, applying it to the inside of the mouth and tongue. Treatment should be continued for 2 days after the problem has cleared up. If the symptoms have not gone after 1 week, the baby should be seen by the doctor.

The doctor's view

Oral thrush seems the most likely diagnosis. It would be reasonable for the pharmacist to institute treatment in view of the baby's age alone, although in this case antibiotic treatment is an additional precipitating factor. If there were any doubt as to the diagnosis, his mother could seek the advice of the health visitor. It might be useful to ask the mother whether or not she was breastfeeding in case any gel needed applying to the nipples. When applying the gel to the mouth, the plaques should be scraped off, if possible, to increase the effectiveness of the treatment.

Insomnia

Insomnia

It is estimated that over 8 million people in the UK have problems sleeping. Temporary insomnia is common and can often be managed by the pharmacist. The key to restoring appropriate sleep patterns is advice on sleep hygiene. OTC products to aid sleep (the antihistamines *diphenhydramine* and *promethazine*) can help during the transition period and can also be useful in periodic and transient sleep problems. However, these products are advertised direct to the public and pharmacists report difficulties in declining sales for continued use. An initial focus on sleep hygiene and careful explanation that antihistamines are for short-term use are therefore important.

What you need to know
Age
Symptoms
Difficulty falling asleep
Waking during the night
Early morning waking
Poor sleep quality
Snoring
Duration
Previous history
Previous episodes
Contributory factors
Shift working, being away from home
Current sleep hygiene
Medication

Significance of questions and answers

Age

In elderly people the total duration of sleep is shorter and there is less deep stage 4 sleep. Nocturnal waking is more likely because sleep is generally more shallow. However, people may still feel that they need more sleep and wish to take a medicine to help them sleep. Elderly

people may nap during the day and this reduces their sleep need at night even further.

Many babies, toddlers and infants have poor sleep patterns, which understandably can cause anxiety to parents. In these situations referral to the health visitor or doctor can be helpful. There are also some helpful self-help books and pamphlets available.

Symptoms

It is important to distinguish between the different types of sleep problems:

difficulty in falling asleep (sleep latency insomnia)
waking during the night
early morning waking
poor sleep quality
snoring

Depression is an important cause of insomnia. Early morning waking is a classic symptom of depression. Here the patient may describe no problems in getting to sleep but waking in the early hours and not being able to get back to sleep. This pattern requires referral to the doctor for further investigation.

Anxiety can also cause insomnia. This is usually associated with difficulty in getting off to sleep because of an overactive mind. This is something that many people experience, particularly before an important occasion, e.g. an exam. If, however, this occurs as a more regular pattern, referral to the GP should be offered.

Duration

Sleep disorders are classified as

transient (days)
short term (up to 3 weeks)
chronic (longer than 3 weeks).

All chronic cases should be referred to the doctor.

Previous history

It is worth asking whether this is the first time problems in sleeping have occurred or whether there is a previous history. Where there is a previous history, it is helpful to know what treatments have been tried. It is also useful to be aware of a history of depression or anxiety or some other mental health problem.

Contributory factors

1 Shift work with changing shifts is a classic cause of sleep problems. Those who work away from home may experience difficulty in getting

a good night's sleep because of the combination of travelling and staying in unfamiliar places.

2 Alcohol – while one or two drinks can help by decreasing sleep latency, the sleep cycle is disturbed by heavy or continuous alcohol consumption.

3 Life changes can cause disrupted sleep; e.g. change or loss of job, moving house, bereavement, loss or separation or the change of life (i.e. menopause).

4 Other stressful life events might include exams, job interviews, celebrations (e.g. Christmas) and relationship difficulties.

5 Obesity can be associated with sleep apnoea and snoring, both of which can interrupt sleeping.

Current sleep hygiene

It is worth asking about the factors known to contribute to effective sleep hygiene (see 'Practical points' below).

Medication

Some drugs can cause or contribute to insomnia including decongestants, *fluoxetine*, MAOIs, corticosteroids, appetite suppressants, *phenytoin* and *theophylline*. Medical problems can be associated with insomnia through pain (e.g. angina, arthritis, cancer and gastro-oesophageal reflux) or breathing difficulties (e.g. heart failure, chronic obstructive airways disease and asthma). Other medical conditions such as hyperthyroidism and Parkinson's disease can also cause insomnia.

When to refer
Suspected depression
Chronic problem (longer than 3 weeks' duration)
Children under 16

Treatment timescale

There should be an improvement within days: refer after 1 week if the problem is not resolved.

Management

Antihistamines (diphenhydramine, promethazine)

Antihistamines reduce sleep latency (the time taken to fall asleep) and also reduce nocturnal waking. They should be taken 20–30 min before bedtime and can be recommended for adults and children over 16. Tolerance to their effects can develop and they should not be used for longer than 7–10 consecutive nights. *Diphenhydramine* has a shorter half-life than *promethazine* (5–8 h compared with 8–12 h). Following a 50 mg dose of *diphenhydramine* there is significant drowsiness for 3–6 h. These antihistamines have anticholinergic side-effects including dry mouth and throat, constipation, blurred vision and tinnitus. These effects will be enhanced if the patient is taking another drug with anticholinergic effects (e.g. tricyclic antidepressants, phenothiazines) but patients taking these drugs would be better referred anyway. Prostatic hypertrophy and closed-angle glaucoma are contraindications to the use of *diphenhydramine* and *promethazine*. *Diphenhydramine* and *promethazine* should not be recommended for pregnant or breastfeeding women.

Benzodiazepines

Despite the UK CSM statement on the use of benzodiazepines, recommending that these drugs are for short-term use only and should not be used for longer than 3 weeks, pharmacists are well aware that patients continue to be on these drugs for long periods of time. Research shows that success rates in weaning patients off benzodiazepines can be high. This is an area where pharmacists and doctors can work together and discussions with local doctors can initiate this process.

Complementary therapies

Some patients prefer alternative treatments for insomnia, perceiving them as more natural. Herbal remedies have been traditionally used for insomnia with valerian and hops being the most commonly used ingredients. They are not recommended for pregnant or breastfeeding women. There are no reports of side-effects.

Aromatherapy

Aromatherapy is effective in aiding relaxation. Lavender oil in particular has been shown to induce a sense of relaxation, as has camomile. One or two drops of the essential oil sprinkled on a pillow, or three or four drops in a warm (not hot) bath can be recommended.

Melatonin

Melatonin is currently available only as POM in the UK; however, it is widely used in the USA to treat insomnia. *Melatonin* is produced by the body's pineal gland during darkness and is thought to regulate sleep. Studies have shown that *melatonin* levels are lower in the elderly. Supplementation with *melatonin* can raise levels and help to restore the sleep pattern. *Melatonin* has a short half-life (2–3 h) and is subject to first-pass metabolism. Sublingual, controlled-release products are therefore popular in the USA.

St John's wort (hypericum)

St John's wort, a herbal remedy, is commonly used in the self-treatment of depression and pharmacists will encounter people who come into the pharmacy to buy it and those who seek the pharmacist's opinion about whether to take it or not. There is some evidence from a systematic review that it is more effective than placebo in treating mild to moderate depression and it appears to be as effective as prescribed antidepressants in these indications. Recent trials have shown that St John's wort is not effective in major depression. Lack of standardisation of the amount of active ingredient is an issue and preparations are not standardised. Pharmacists will make their own decisions about whether they will recommend St John's wort, and they need to be prepared to answer requests for advice about its use and to be aware of the emerging evidence. St John's wort is an inducer of drug-metabolising enzymes and there are some important drug interactions (see the *BNF* for a full current listing). The CSM has advised that St John's wort should not be taken with other medicines. Pharmacists are an important source of information for patients about possible interactions.

Nasal plasters for snoring

These adhesive nasal strips work by opening the nostrils wider and enabling the body to become accustomed to breathing through the nose rather than the mouth. A plaster is applied each night for up to 1 week to retrain the breathing process. The strips have been suggested for use in night-time nasal congestion during pregnancy.

Practical points

Sleep hygiene

Key points are:

establish a regular bedtime and waking time

consciously create a relaxation period before bedtime

no meals just before bedtime

no naps during the daytime
no caffeine after lunchtime
reduce extraneous noise (use earplugs if necessary)
get up if you can't sleep – go back to bed when you feel 'sleepy tired'
restrict alcohol intake to 1–2 units a day
restrict nicotine intake immediately before bedtime

Bathing

A warm bath 1–2 h (not immediately) before bedtime can help induce sleep.

Using heat

An electric blanket can help sleep by relaxing the muscles and increasing brain temperature. The effect is not needed throughout the night, only in inducing sleep. Using a timer to switch off the blanket after 1 or 2 h is sensible.

Caffeine

The stimulant effect of caffeine in coffee, tea and cola drinks is considerable. Avoiding caffeine in the afternoon and evening is sensible advice.

Insomnia in practice

Case 1

Chris Jenkins, a 20-year-old student, comes into the pharmacy requesting some tablets to help him sleep. He says that he has had problems sleeping ever since he returned from Indonesia 10 days ago. He says that he cannot get off to sleep because he does not feel tired. When he eventually does fall asleep, he sleeps fitfully and finds it difficult to get up in the morning. He has never suffered from insomnia before. He is otherwise well, is not taking any medicines and does not have any other problems or difficulties.

The pharmacist's view

Long-haul travel can result in disruption of the sleep pattern and some people are more affected by it than others. It would be reasonable to recommend that Chris take an antihistamine (*diphenhydramine* or *promethazine*) for 4–5 days until the problem resolves. An alternative would be one of the herbal products to aid sleep. He should find that his normal sleep pattern is re-established within 1 week.

The doctor's view

This is quite likely to be a short-term problem due to his recent travelling. A very short course of antihistamines seems sensible to re-establish a better pattern. Many people who complain of insomnia do not always admit to other problems in their lives. It is therefore important to be alert to this possibility. If his insomnia does not resolve quickly, or if the pharmacist were to notice that Chris seemed low or anxious, a referral would be appropriate.

Case 2

Maureen Thomas, aged about 50, comes in asking for something to help her sleep. She says she has seen an advertisement for some tablets that will help. Maureen explains her sleep has been bad ever since she had her children, but over the last week it has got worse. She says she has had problems in getting off to sleep and recently has been waking early and not getting back to sleep. She says that she has had some worries at work and her Mum has been unwell . . . 'but that's all, no more than usual. I've had to put up with a lot worse and managed! I just need a few days' good sleep and I'll be OK.' Otherwise she reveals that she is not on any other medication and has never troubled anyone before with her sleeping problem.

The pharmacist's view

This patient is experiencing a number of sources of stress and difficulty that are likely to be contributing to her sleep problems. In addition to having trouble getting to sleep, she is also waking early and unable to get back to sleep, indicating that the sleep disturbance is extensive. Early waking can also be a symptom of depression. It would be best for her to see the doctor and this will need a careful, persuasive explanation from the pharmacist. It would also be useful to talk about sleep hygiene to see if there are any practical actions that she could take to alleviate the problem. While the use of an antihistamine or herbal medicine for a few days would not be harmful, it may prevent her from seeking advice from the doctor. Therefore it would be better not to recommend a medicine on this occasion.

The doctor's view

Ideally this woman should be advised to make an appointment to see her doctor. It is possible that she would be reluctant to do so, as she gives the impression that she thinks she should be able to cope and should not have to trouble anyone else with her problems. If the pharmacist could persuade her that it is completely acceptable to seek advice from her doctor, this would be the best course of action.

She sounds depressed and it would be helpful for a doctor to make a full assessment. This would include how she is feeling, how her life is being affected and what other symptoms she may have. It may be that she is also distressed by changes associated with the menopause.

Just the ability to talk to a good, attentive, accepting listener can be very beneficial. She may benefit from seeing a counsellor whom the doctor can arrange. If her symptoms are severe and if she agrees, she may benefit from antidepressant medication.

Case 3

A man whom you do not recognise as a regular customer asks to speak with you. He tells you that he has been feeling rather stressed lately in his job (he is an estate agent and works locally). He says he is having trouble sleeping and feels that things are getting on top of him. He isn't getting much exercise these days – he used to play football and go training regularly but since a knee injury he has given it up. He thinks he might be depressed but doesn't want to see his doctor because he doesn't want to end up on antidepressants. He read an article in the paper yesterday about St John's wort and would like to try it. He asks what you think and if it's safe.

The pharmacist's view

This is not an uncommon query. If someone just asks to buy St John's wort, I'd sell it to them after checking about other medication and asking whether they wanted to discuss anything. But if they ask for my view or for advice, I would discuss it with them. I find that some people don't want to see the doctor even when they think they're depressed. In this case it's because of a dislike of the idea of taking antidepressants. Although there is evidence that they work, especially in severe depression, it's not so clear-cut for mild and moderate depression. Cognitive therapy would be another option. There's good evidence to support it but its availability varies. Also some people want to try to manage their depression themselves rather than get into the formal health system.

I would take this man to a quiet part of the pharmacy.

If he decided to try St John's wort, I would explain that it could take 3–4 weeks to work. I would tell him that it does have some sedative effect and that taking it at night could be helpful.

If it were a woman of childbearing age, I would always ask whether she was on the pill, because St John's wort interacts with the OCP and makes it less effective. If she still wanted to take St John's wort, I would give some advice about using extra contraceptive protection.

The doctor's view

In this situation it would probably be all right for him to try a course of St John's wort. There is evidence of its efficacy. A recent *Cochrane Review* of 27 trials including a total of 2291 patients concluded that extracts of hypericum (St John's wort) are more effective than placebo for the short-term treatment of mild to moderately severe depressive disorders. There is insufficient evidence to establish whether hypericum is as effective as other antidepressants. Interestingly there is very little evidence about the longer-term benefits of antidepressants in primary care. Most studies have used a highly selective population in secondary care in the UK (hospital consultant psychiatric care) over a short time period. Of all the mental health problems 90–95% are dealt with in primary care with only 5–10% in secondary care.

The pharmacist could suggest that he goes to see his GP anyway whether he takes the St John's wort or not, and it could be pointed out that it would be his choice whether to take antidepressants.

If this man were to come to his GP, which would be very reasonable, it would be important to hear more about how he is being affected by his problem, i.e. what it is like for him, what is the impact on his life, how he feels, etc. It would be useful to hear about his understanding of the problems and how he thinks he can be helped, and whether he would be prepared to see a counsellor. The GP would need to do a risk assessment and check whether he is feeling suicidal and if so, whether he has specific plans as to how he might kill himself. Once an initial assessment has been made it can often be useful to delay starting medication or making a referral at the first consultation and instead offer to review him in the next few days or week to see how he is. Just the fact of coming to see the GP, being listened to and taken seriously can be helpful, and the problem may be viewed in a different or better light on subsequent follow-up. In his case it probably would be best to advise a non-pharmacological approach. Even if he were to take St John's wort or an antidepressant, the conditions triggering his depression are likely to be still there when he stops the medication. He could be referred for brief intervention counselling/therapy (e.g. Human Givens approach) if he were in agreement.

Another way to help him could be to enable him to get back to some exercise. When he presented at the pharmacy he mentioned that he was unable to play football because of a knee injury. It might be really helpful to have this reassessed by the GP. Perhaps a referral to an orthopaedic surgeon or physiotherapist might be useful. It sounds as though a return to exercise could help him deal with some of his stress.

The customer's view

It was useful to know more about whether St John's wort works or not. The pharmacist made me feel as though it was my choice and told me that if I went to the doctor, I could say that I didn't want anti-depressants. I decided to try St John's wort for a few weeks and see how it goes.

Prevention of Heart Disease

Prevention of heart disease

This chapter is different from the others in this book, which are primarily concerned with responding to a symptom. Here the pharmacist is unlikely to be dealing with symptoms and is instead assessing risk and advising on preventive treatment. The development of cardiovascular disease (CVD) is largely asymptomatic up to the point where an 'event' (such as a heart attack or stroke) occurs. The pharmacists can make interventions to prevent the development of CVD while assisting people who are largely symptom-free but at increased risk of developing heart disease in the future. These interventions are called primary prevention. Here the individual is not a patient because he or she does not have any disease or condition. Once a person has experienced an event and has ongoing disease, the prevention of subsequent events is termed secondary prevention.

CVD can be subdivided into stroke and coronary heart disease (CHD). CHD occurs because of narrowing and/or blockage of the coronary arteries. It may be sufficient to cause myocardial ischaemia – ischaemic heart disease (IHD) – and can be present without symptoms. CHD may remain asymptomatic until it manifests as myocardial infarction (MI), sudden death or cardiac dysfunction (such as arrhythmias or cardiac failure). Some patients may therefore suffer consequences of myocardial ischaemia without any history of warning symptoms.

CHD is a leading cause of mortality and morbidity in the UK. Despite a fall in CHD mortality in recent years, the UK death rate is still amongst the highest in the world at around 120 000 per year. This equates to someone in the UK having a heart attack every 2 min. In addition, more than 1.5 million people in the UK have angina.

Preventing CHD is a national priority. The National Service Framework (NSF) for Coronary Heart Disease in England sets out plans to ensure that the best care, in terms of prevention, diagnosis and treatment, is available to everyone. The NSF also defines the government target of cutting mortality from heart disease by 40% in people less than 75 years by 2010.

However, the NSF has prioritised for intervention those individuals at greatest risk. This includes patients with established CVD (secondary prevention) and those with a high risk of developing the disease (primary prevention). The NSF currently defines a 'high-risk'

threshold for intervention as a CHD event risk greater than 30% over 10 years, but recognises that those with a greater than 15% risk should be progressively targeted as resources allow. The *BNF* includes a table to determine risk produced by the Joint British Societies Coronary Risk Prediction Chart. It is anticipated that the NSF targets may change in the future and that this will increase the number of people targeted by the NHS.

The causes of CHD are multifactorial and are often termed 'risk factors'. The summation of these risk factors will provide an assessment of absolute CV risk, which should be the starting point for discussions with patients, and a reduction in absolute risk should be the goal of interventions.

What you need to know
Age, gender
Ethnic origin
Family history of CHD
Smoking history
Waist circumference/body mass index
Diet
Physical activity
Alcohol intake
Medical history (blood pressure, diabetes, cholesterol/lipid profile)
Medication

Significance of questions and answers

Assessment of an individual's risk of developing CHD involves the summation of both modifiable and non-modifiable risk factors for developing the disease. Non-modifiable risk factors include age, gender, ethnic origin, and family history of CHD. These risk factors cannot be altered. Interventions to reduce absolute CHD risk are focused on modifiable risk factors.

Age, gender

With age the risk of developing CHD increases. Around 80% of people who die from heart disease are aged 65 or over. It is commoner in men than women (the lifetime risk of developing it at age 40 is 1 in 2 for a men and 1 in 3 for a women). Postmenopausal women have a CV risk similar to that of men.

Ethnic origin

Heart disease in the UK is commoner in Afro-Caribbean people and those from the Asian subcontinent (Bangladesh, India, Pakistan, Sri Lanka).

Family history of CHD

Risk of developing CHD increases if an individual has a close relative (father, mother, brother, sister) with the disease. A family history of premature CHD (i.e. a father or brother who had a coronary event before the age of 55, or a mother or sister before the age of 65) is an even stronger indicator of risk.

Smoking history

Currently, in the UK, 29% of men and 25% of women smoke. Smoking tobacco has been shown to increase the risk of MI. This effect is related to the number of cigarettes smoked; heavy smokers (more than 20 per day) increase their risk of MI by two- to fourfold over non-smokers. No level of smoking has been demonstrated to be safe. Those who have recently stopped smoking remain at a higher risk for as long as 5 years after stopping, but the risk begins to decline within a few months of stopping.

Waist circumference/body mass index

Obesity is associated with an increased risk of stroke, CHD, type 2 diabetes, hypertension and dyslipidaemia, i.e. raised total cholesterol, high low-density lipoprotein (LDL) cholesterol, and high triglyceride levels. Abdominal obesity (apple-shaped body) is particularly significant, and waist circumference may be a better predictor of susceptibility to CHD than BMI.

BMI is calculated by dividing an individual's weight (kg) by height (m) squared. The normal range of BMI is between 18.5 and 25 kg/m^2. Overweight is defined as a BMI $> 25\,kg/m^2$ and obesity is defined as a BMI $> 30\,kg/m^2$.

Men in the UK increase their risk of CHD by 10% with every $1\,kg/m^2$ increase in BMI above $22\,kg/m^2$. Waist circumference > 94 cm in men and 80 cm in women identifies a CHD risk equivalent to that of a BMI $> 25\,kg/m^2$. For a circumference greater than 102 cm in men and 88 cm in women the risk is equivalent to that of a BMI $> 30\,kg/m^2$.

About 46% of men and 32% of women in the UK are overweight and an additional 17% of men and 21% of women are obese. Overweight and obesity increase with age. About 28% of men and 27% of women aged 16–24 are overweight or obese while 76% of men and

68% of women aged 55–64 are overweight or obese. Worldwide adult obesity has exceeded the WHO definition of an epidemic (> 15%). It has been estimated that as many as 1 billion individuals may be overweight or obese.

Overweight and obesity are increasing. The percentage of adults who are obese has roughly doubled since the mid-1980s. Frequent fluctuations in weight are also associated with an increased risk of developing CHD.

Physical activity

Regular aerobic exercise has been proven to assist weight loss and reduce blood pressure. Physical inactivity is associated with an increased incidence of developing hypertension (a CHD risk factor).

Alcohol intake

Drinking more than 21 units of alcohol per week is associated with an increase in blood pressure, which can be reversed if the intake is reduced. Small regular amounts of alcohol (such as 1–2 glasses of red wine per day) have been shown to slightly reduce the chances of developing CHD.

Medical history (hypertension, diabetes, cholesterol/lipid profile)

Raised blood pressure (> 140/90 mmHg, see Table 9 for PRODIGY definitions) has been shown to be a risk factor for the development of stroke and CHD. Diastolic pressures of 90–109 mmHg are found in about 20% of the middle-aged adult population. In younger people the prevalence is lower, and in elderly people it is higher. Current estimates suggest that, in the UK around 40% of men and women have raised blood pressure. In addition, undertreated hypertension is common, with up to half of all people with diagnosed hypertension not reaching recommended targets.

Contributing factors to hypertension should be identified. These include obesity, excessive alcohol intake (3 units/day), high salt intake and physical inactivity.

Diabetes

Developing diabetes has the equivalent effect on increasing an individual's CHD risk as having a heart attack. It increases CHD mortality by 2–3 times in men and 4–6 times in women. Eighty per cent of type 2 diabetics (the commonest type of diabetes, by a ratio of 9 : 1) are obese. This has led to the coining of the term 'diabesity' which cleverly combines the two conditions. Patients with type 2 diabetes have a two- to fourfold increased risk of, and a fourfold increase in, mortality

Table 9 Definitions of blood pressure levels (mmHg) in people without diabetes

Category	Systolic	Diastolic
Normal	< 129	< 84
High normal	130–139	85–89
Mild hypertension	140–159	90–99
Moderate hypertension	160–179	100–109
Severe hypertension	≥ 180	≥ 110

from CHD. Intensive glycemic control has a more modest effect on reducing macrovascular than microvascular complications. This is because the development of CVD is multifactorial, and hyperglycaemia is only one of many risk factors.

Epidemiologic data suggest that a glycosylated haemoglobin (HbA1c) level of 7% or less is reasonable to avoid or minimise the complications associated with type 2 diabetes. Studies have shown that there is an increased risk of CV mortality even before the onset of type 2 diabetes.

Many studies, including the Framingham Heart Study, have clearly established that high total cholesterol (TC) levels are associated with increased risk of developing CHD. CHD is caused when the blood vessels to the heart (the coronary arteries) become narrowed by a gradual build-up of fatty material within their walls – a condition called atherosclerosis. Atheroma develops when LDL cholesterol is oxidised and is taken up by cells in the coronary artery walls where the narrowing process begins. On the other hand, high-density lipoprotein (HDL) cholesterol removes cholesterol from the circulation, and appears to protect against CHD. So the ratio of HDL to LDL is important. The goal is to have a low level of LDL (< 3 mmol/L) and a high level of HDL (> 1 mmol/L).

As a general rule, the higher the TC level, the greater is the risk to health. A TC level of less than 5 mmol/L is often a target aimed for. However, more than half of adults in the UK have a TC level above this figure. Increasing importance is being placed upon LDL rather than TC; from long-term epidemiological studies and intervention studies with statins, it is clear that reductions in LDL levels correlate closely with reduction in CHD risk. This relationship (plotted on a logarithmic or doubling scale) is a straight line with no threshold below which a reduction in LDL does not produce a further reduction in risk. This means that if someone has an absolute level of risk that

justifies treatment, reducing the LDL will reduce that risk, whatever their starting level of cholesterol.

The level of LDL cholesterol in the blood tends to rise, and HDL falls, with the amount of saturated fat that is eaten. On the other hand, unsaturated fats have a good effect as they tend to lower LDL levels. A high level of triglycerides also increases the risk of CHD and stroke.

Medication

A full medication history is important as some medicines can affect CHD risk either positively or negatively. The potential contribution of OTC medicines should also be considered. Medications with a positive effect on CHD risk will be considered later in the chapter. Factors predisposing to CV toxicity include existing heart disease, uncorrected electrolyte abnormalities and poor renal function.

Sympathomimetic drugs such as *adrenaline*, *noradrenaline*, *dobutamine*, *dopamine* and *phenylephrine* can all cause systemic hypertension and precipitate heart failure. Other commonly prescribed medicines with CV side-effects include *thyroxine*, tricyclic antidepressants and triptans.

Sudden withdrawal of beta-blockers may induce unstable angina, MI and sudden death. This is thought to be due to an increased myocardial oxygen consumption caused by an increase in heart rate subsequent to the removal of beta-blockers. This effect is more commonly seen after short-acting beta-blockers are stopped.

Epidemiological studies have demonstrated that combined oral contraceptives increase the risk of CVD. Oral contraceptives have complex effects on blood pressure, platelet function, blood coagulation, carbohydrate metabolism and lipid metabolism. Similarly, current evidence suggests that hormone replacement therapy (HRT) should not be used for the prevention of CHD post-menopause.

Managing heart disease risk in the pharmacy

The modifiable risk factors for CHD are generally accepted as smoking, cholesterol/lipid imbalance, hypertension, poor diet, obesity, excessive alcohol intake, physical inactivity and inadequate diabetes control. A recent peer-reviewed literature search demonstrated the contribution of community pharmacy-based services to the reduction of risk behaviours and risk factors for CHD. Four RCTs were identified: two in smoking cessation and two in lipid management. The evidence supports the wider provision of smoking cessation and lipid management through community pharmacies. Both primary and secondary prevention of CHD involve similar interventions.

Smoking cessation and nicotine replacement therapy

Over the past 5 years smoking cessation has become an increasingly important focus for the NHS. This has led to major investment and the UK can now boast a world-leading smoking cessation service. Nonetheless, there are still around 13 million tobacco users in the UK and these cost the NHS £1.7bn per year.

Research suggests that around 70% of smokers would like to give up, but only 2–3% of smokers manage to quit using will power alone. NRT is an effective aid to smoking cessation for those smoking more than 10 cigarettes a day, and is regarded by the *BNF* as the pharmacological treatment of choice. Smokers are about twice as likely to stop smoking long-term when prescribed NRT and are up to six times more likely to succeed when NRT and behavioural support are combined. The current National Institute for Clinical Excellence (NICE) guidelines recommend that NRT should only be prescribed for a smoker who commits to a target stop date.

Smoking cessation – tips for customers about quitting

- Set a quit date, prepare for it and stick to it
- Get support and advice from friends, family and health professionals
- Consider NRT for the first few weeks
- Avoid situations where you will find it difficult not to smoke
- Change your routine to distract yourself from times and places you associate with smoking
- Stop completely; cutting down rarely works so do not be tempted to have 'just one puff'
- Get rid of all cigarettes, lighters and ashtrays before your quit date
- Ask people not to smoke around you and tell everyone you are quitting
- Keep busy, especially when cravings start
- Reward yourself for not smoking
- Calculate how much money you will save and plan how you will now spend it

A range of NRT products are available. They vary in the ease and frequency of use, the speed of nicotine release and the amount of behavioural replacement provided. There are no conclusive studies to show that one formulation is any more effective than another at achieving cessation. All products will increase the chances of success if used correctly.

Nicotine replacement therapy – formulation options

Patches

Discreet – easy to wear and forget about, but watch for skin irritation
Continuous nicotine release – suitable for regular smokers
16 h patch (removed at night) – reduced insomnia
24 h patch – good for early morning cravings
Three strengths – allows a step-down reduction programme

Gum

Flexible regime – controls cravings as they occur
Various flavours – allows customer preference
Various strengths – allows step-down reduction programme
Chewed slowly – to release nicotine, then 'park' gum between cheek and gum

Nasal spray

Fast-acting – helpful for highly dependent smokers
Local side-effects (sore throat, rhinitis) – usually pass after first few days

Sublingual tablet

Discrete – placed under tongue and dissolves over 20 min
Dose variation – one or two (2 mg) tablets may be used per hour
Sublingual – sucking or chewing the tablet will reduce its effectiveness

Inhalator

Cigarette substitute – useful for smokers who miss hand-to-mouth action
Reduce usage over time – the recommended period is 12 weeks

Lozenge

Various strengths – allows step-down reduction programme
Highest strength (4 mg) – good for smokers who start within 30 min of waking
Sucked until taste is strong – lozenge then 'parked' between cheek and gum

Licensed indications for OTC nicotine replacement therapy

NRT can be recommended for adults aged 18 or over. Many pharmacists regard this as disappointing and as a lost public health opportunity when the legal age to purchase cigarettes is 16. OTC NRT should not be used

- by anyone with severe CVD
- in pregnancy (see below)
- during breastfeeding

Some areas have a PGD for pharmacists to supply on the NHS and this may include people who fall outside the OTC licensed groups.

Many women give up smoking during pregnancy. NRT is, without doubt, safer than smoking and the current NICE guidelines recommend that NRT be prescribed if needed. Consequently, the *BNF* now suggests that NRT can be used if a pregnant woman requires it to help her quit smoking.

Pharmacists should offer patients support during their attempt to quit. Many patients relapse but then succeed on subsequent attempts. Positive messages can help to motivate.

Positive messages for new non-smokers

- Giving up smoking reduces the risk of developing smoking-related illness
- 8 h after quitting, nicotine and carbon monoxide levels in the blood are reduced by half and oxygen levels return to normal
- After 24 h, carbon monoxide is eliminated
- After 48 h, nicotine is eliminated
- After 3 days, breathing becomes easier
- After 2–12 weeks, circulation is improved and smokers' coughs start to get better
- After 6 months, lung efficiency will have improved by 5–10%
- After 5 years, the risk of having a heart attack is half of that of a smoker
- After 10 years, the risk of heart attack is the same as a non-smoker
- After 10–15 years, the risk of developing lung cancer is only slightly greater than that of a non-smoker
- Research has shown that people who stop smoking before the age of 35 survive about as well as lifelong non-smokers

Weight management

Being overweight increases the chance of having a heart attack. This is in part because obese individuals are more likely to have high blood pressure, diabetes and high blood fats. Less fat, sugar and alcohol in the diet is helpful for weight control. In order to achieve a healthy body weight, it is also important to build regular, moderate exercise into a daily routine.

Table 10 Benefits of 5–10 kg weight loss

Condition	Health benefit
Mortality	20–25% fall in overall mortality
	30–40% fall in diabetes-related deaths
	40–50% fall in obesity-related cancer deaths
Blood pressure	10 mmHg fall in diastolic and systolic pressures
Diabetes	Up to a 50% fall in fasting blood glucose
	Reduces risk of developing diabetes by over 50%
Lipids	Fall of 10% TC, 15% LDL, and 30% triglycerides
	Increase of 8% HDL

Pharmacy staff should counsel customers whose BMI is $> 25\,kg/m^2$ on an appropriate plan for weight loss. A 3-month programme of weight reduction should aim for a 5–10 kg weight loss over 3 months or 0.5 kg per week (combining diet, exercise, and behavioural strategies). See Table 10 for benefits of weight loss.

Pharmacy staff can give advice on a healthy diet. The recommended calorie intake should be between 1200 and 1600 kcal per day. People should be advised to moderate fat intake by eating less fatty meat, fatty cheese, full-cream milk, fried food, lard, etc., and to reduce the amount of sugar. They should consider eating more vegetables, fruit, cereals, wholegrain bread, poultry, fish, rice, skimmed or semi-skimmed milk, grilled food, lean meat, pasta, etc.

If the customer does fry food, suggest choosing a vegetable oil high in polyunsaturates ('good fats') such as sunflower or rapeseed oil. Suggest considering a low-fat spread that contains plant stanol esters. Such plant stanol-containing supplements have been shown to reduce cholesterol levels and may be useful adjuncts in lowering cholesterol levels. Reducing cholesterol levels is possible through dietary manipulation. However, the magnitude of such reductions is modest, even with strict adherence to a diet plan. In addition, many patients will find it hard to sustain a strict dietary regime.

Physical inactivity is an important contributor to CHD. CV benefits of regular physical activity include reduced blood pressure and less likelihood of obesity, which help to reduce the risk of developing CHD. At least 30 min of steady activity on 5 or more days a week is recommended. Walking, jogging, swimming, cycling and dancing are all excellent choices. Remember to advise patients to start slowly and gradually build up their exercise.

OTC simvastatin

The goal of OTC *simvastatin* 10 mg is to reduce the risk of a first major coronary event (i.e. non-fatal MI and CHD deaths) in people who are likely to be at moderate risk of CHD.

Men aged 55 and above are likely to be at moderate risk of CHD (approximately 10–15% 10-year risk of a first major coronary event). In addition, men aged 45–54 and women aged 55 and above are likely to be at moderate risk of CHD if they have one or more of the following risk factors:

- Family history of CHD in a first-degree relative (parent or sibling); CHD in male first-degree relative below 55 or female first-degree relative below 65.
- Smoker (is currently or has been a smoker in the last 5 years).
- Overweight (BMI $> 25\,kg/m^2$) or truncal obesity (waist: 40 inches or 102 cm in men; 35 inches or 88 cm in women).
- Of South Asian ethnic origin.

OTC *simvastatin* should be taken as part of a programme of actions designed to reduce the risk of CHD. People aged over 70 years should start OTC simvastin following advice from their doctor. These include cessation of smoking, eating a healthy diet, weight loss and regular exercise. *Simvastatin* treatment can be initiated simultaneously with diet, exercise and smoking cessation.

In an essentially normal population it is reasonable to use the lowest effective dose to achieve the proportionately greatest benefit. The rare adverse events (e.g. muscular pain) associated with statin use are dose-related and linked in many cases to drug–drug interactions that increase statin effects. The risk of such events with *simvastatin* 10 mg is very low and therefore the risk-to-benefit ratio for the self-medicating individual is favourable.

Pharmacists and their staff should encourage customers to read the PIL carefully, paying particular attention to the section on side-effects. Research with the general public suggests that their understanding of the frequency of adverse events is at variance with statutory definitions. For example, the European Union (EU) definition of a rare adverse event would suggest a frequency of between 0.01% and 0.1%. When Berry *et al*. (*Lancet* 2002; **359**: 853–4) asked 200 people what frequency 'rare' might suggest to them, a figure of 8% was reported.

The possibility of rare but important side-effects – liver disease, myopathy (unexplained generalised muscle pain, tenderness or weakness, e.g. muscle pain not associated with flu, unaccustomed exercise or recent strain or injury) and allergic reactions – should be explained and discussed with customers.

The *BNF* reports that statins are rarely associated with altered liver function including drug-related hepatitis. Reversible myositis is also a rare but significant side-effect of the statins. Both these reactions are thought to be dose-related. Some patients may ask about these issues following the withdrawal of *cerivastatin* from the market. Rash and hypersensitivity reactions (including angioedema and anaphylaxis) have also been rarely reported.

If taken regularly, *simvastatin* 10 mg will reduce an individual's LDL cholesterol by 27% on average. The relationship between *simvastatin* dose and LDL cholesterol reduction is log-linear in nature: a doubling of dose from 10 mg to 20 mg increases the relative reduction of LDL cholesterol from around 27% to 32%, and doubling the dose again to 40 mg produces a further 5% improvement.

In addition, the absolute reduction of LDL cholesterol achievable with 10 mg *simvastatin*, if sustained, will produce around 30% relative reduction in CHD risk. This will result in a worthwhile absolute risk reduction in those at moderate risk and if the individual also modifies other risk behaviours (such as stopping smoking, weight reduction and regular exercise), the benefits will be considerable.

Aspirin 75 mg

Low-dose *aspirin* tablets may be sold as a P medicine in packs of up to 100 tablets. They are currently licensed for the secondary prevention of thrombotic strokes, transient ischaemic attacks (TIAs or 'mini-strokes'), heart attacks or unstable angina.

Low-dose *aspirin* is recommended by the *BNF*, for primary prevention of vascular events, as antiplatelet therapy in patients who have an estimated 10-year CHD risk greater than or equal to 15%. Patients with hypertension should have their blood pressure controlled to minimise the risk of antiplatelet therapy contributing to the risk of cerebrovascular bleeding. Patients should be assessed for contraindications to *aspirin* therapy and patients at increased risk of GI bleeding may require cover with a gastroprotective agent. There is no compelling evidence to currently support the use of *aspirin* in lower-risk subjects, such as middle-aged males with no other risk factors.

Preventing heart disease in practice

Case 1

A man who looks as if he is in his mid-fifties asks to speak to the pharmacist. He says: 'I've been wondering if I should take them junior *aspirins*. A few of the lads at the snooker club are on them – and they say it can stop you having a heart attack?' He asks what you think and

if it is true that the *aspirin* tablets can prevent heart attacks. He does not appear to be overweight.

The pharmacist's view

I would first ask this man why he thinks he might need *aspirin*. That will give me an idea of how he has assessed his risk and it will be a good starting point. I would need to assess this man's risk of heart disease by asking about family history, smoking, diet, physical activity and medication (looking particularly for diabetes and hypertension). On the basis of this assessment, I would decide whether he needed to be referred to the GP. If he were a smoker, I would prioritise that and discuss his readiness to quit. Then I would decide what to do next.

The doctor's view

I would agree with the pharmacist about checking his overall risk factors, his understanding of these factors and the areas he needs to work on. *Aspirin* is mainly used for secondary CHD prevention but if the 10-year risk for CHD is 15% or more, then it can be used for primary prevention. If he hasn't had a blood pressure or cholesterol test in the last year or so, then it would make sense for this to be done. Some pharmacies provide this service. In most GP surgeries further assessment and information can be gleaned from seeing the practice nurse. The most important aspect of advice is to cover all the risk factors and not just focus on one area. A follow-up review is often helpful to see how lifestyle has changed and what difficulties have been experienced.

Case 2

A woman in her forties comes in asking for some patches to help her give up cigarettes. The pharmacist finds out that she is a heavy smoker, 20–30 per day, and has smoked for 25 years. She knows that she is overweight and struggles to keep it down. She managed to stop smoking for about 3 months once, but put on weight. She has a family history of diabetes and two of her grandparents died of heart attack in their seventies. Her uncle who is 60 has angina. She saw her GP about 1 year ago who told her that her cholesterol level was mildly raised at 6 and her blood pressure was borderline. She was supposed to go back for a review but hasn't done so yet.

The pharmacist's view

I would ask this woman to tell me about her previous attempt to quit, including whether she used NRT that can be bought OTC; in some parts of the country, pharmacies are part of local NHS smoking

cessation services and can provide treatment. Many people are concerned that they will put on weight when they stop smoking and I would talk with her about this. The health benefits of stopping smoking far outweigh any additional risk from being overweight, and discussing the figures can get this point across. Talking about what happened after she stopped smoking last time including her diet and eating patterns might provide some ideas about minimising weight gain this time.

The doctor's view

It is very encouraging that she wants to do something about her smoking, especially as she has several risk factors for CHD. I think the pharmacist is in a good position to counsel and perhaps advise an appropriate NRT. It would be useful to ascertain how she managed to stop last time and the reasons for starting cigarettes again. The pharmacist is also in a position to offer advice about her weight and find out about her level of physical exercise. It also would be helpful to suggest a review at her GP's surgery to follow up her blood pressure and cholesterol. It is likely the GP would want to do some blood tests: fasting lipid profile; fasting blood glucose; electrolytes and renal function; and liver profile. In addition, a urine test checking for proteinuria and glycosuria would be useful, and possibly an ECG. If after 3 or 4 readings she remained mildly hypertensive, medication such as *bendrofluazide* would be advised. Of course, if she were able to lose weight and increase exercise, this would also help to lower her blood pressure.

Appendix: Summary of symptoms for direct referral

Chest
Chest pain
Shortness of breath
Wheezing
Swollen ankles
Blood in sputum
Palpitations
Persistent cough
Whooping cough
Croup
Sputum mucoid, coloured

Gut
Difficulty with swallowing
Blood in vomit
Bloody diarrhoea
Vomiting with constipation
Weight loss
Sustained alteration in bowel habit

Eye
Painful red eye
Loss of vision
Double vision

Ear
Pain
Discharge
Deafness
Irritation
Tinnitus
Vertigo

Genitourinary
Difficulty in passing urine
Blood in urine
Abdominal/loin/back pain with cystitis
Temperature with cystitis
Urethral discharge
Vaginal discharge
Vaginal bleeding in pregnancy

Other
Neck stiffness/rigidity with temperature
Vomiting (persistent)

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